TESS | Forum on Trade Environment & the SDGs

POLICY BRIEF

Trade and Sustainability in the Agricultural Sector: Options for Multilateral Trade Cooperation

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Key Insights

- With the number of people affected by hunger worldwide estimated between 720–811 million, the agricultural sector is failing to deliver food and nutrition security for all.
- At the same time, agri-food systems contribute to envrionmental degradation and in 2019 represented 31% of global greenhouse gas emissions. Alongside, hundreds of millions of farmers around the world rely on the agricultural sector for their livelihoods.
- A core challenge for international cooperation is how to ensure that trade and trade policies support sustainable production and access to food in ways that protect the environment, improve livelihoods, and promote sustainable development.
- This policy brief explores the complex relationship between international trade and sustainable agriculture in light of the challenges facing the global food system and the environment.
- The author reviews a range of options for harnessing trade policies to promote sustainable agricultural production and trade, and to discourage unsustainable practices, in the context of the rules and functions of the World Trade Organization (WTO).
- The policy brief also identifies opportunities to strengthen a focus on sustainability in the WTO's negotiating agenda as well as its regular committees such as the Committee on Agriculture and the Committee on Trade and Environment.
- It further highlights the importance of deliberative platforms to explore cooperation opportunities, noting that the Trade and Environmental Sustainability Structured Discussions, co-sponsored by over 70 WTO members, could play an important role in advancing dialogue and identifying areas for work on the sustainability dimensions of agricultural trade.

Contents

1. Introduction

Land-based agriculture provides the bulk of world food supply and represents a critical source of feed, fuel, and livelihood for hundreds of millions of smallholder farmers. While the agricultural sector has proven relatively resilient in the face of the COVID-19 pandemic, it is still largely failing to deliver food and nutrition security for all. After significant progress in reducing both the number and share of hungry people over the last couple of decades, the number of people affected by hunger worldwide increased in recent years to reach between 720 and 811 million people, located mostly in Asia and Africa—a trend which makes achieving the Sustainable Development Goal (SDG) zero hunger target by 2030 particularly challenging (FAO, IFAD, et al., 2021).

Meanwhile, the agricultural sector contributes both directly and indirectly to environmental degradation, including deforestation, soil pollution, and biodiversity loss. Agri-food systems represented also 31 % of total greenhouse gas emissions in 2019 (FAO, 2021). Conversely, sustainable agricultural practices can contribute to and foster environmental regeneration and restoration, avoid pollution, and support sustainable use of natural resources.

In the coming years, one of the greatest challenges facing the agricultural sector will be to feed and provide adequate nutrition for nine billion people by 2050 while responding to the rapidly changing diet of a growing middle class in urban areas. Meeting this target will require improved equitable access, availability, and stability of food supply—objectives which are likely to put additional pressure on stretched natural resources such as land and water and increase greenhouse gas (GHG) emissions.

In short, the challenge is not only to improve access and production to deliver the 2030 zero hunger target, but to do so in a way that protects ecosystems and restores biodiversity, maintains soil productivity, rationalizes the use of water, and reduces GHG emissions, including by ensuring that nature can serve as a sink for carbon.[1] As countries seek to decouple economic growth from material inputs to remain within planetary boundaries and address the triple crisis of climate change, pollution, and biodiversity loss, sustainable agriculture will be vital to a transition to a more resource-efficient and circular

1. Sustainable productivity improvements will be key to meeting increased demand without exerting additional pressure on fragile ecosystems while addressing the problem of inadequate access to food, insofar as many food insecure people are small farmers who are struggling to achieve competitive yields.

economy. It should also contribute to the realization of human rights such as the right to food, health, safety, and land and the right to a clean, healthy, and sustainable environment as recognized recently by the United Nations Human Rights Council (UN General Assembly, 2021).

International trade and trade policies have a complex role to play in this equation. In the absence of effective regulatory frameworks, trade can exacerbate environmental challenges associated with food production and land use trends such as deforestation, land degradation, GHG emissions, and biodiversity loss. Trade opening can disrupt local food production systems, markets, and communities, or introduce unhealthy foods that generate public health challenges. On the other hand, trade plays a critical role in ensuring access to food. In the future, trade will also have an essential role to play in tackling food insecurity resulting from the climate crisis. It can support higher returns for sustainably produced food and participation in international supply chains can help to diffuse environmentally sustainable practices and technologies. More generally, trade can be key to creating jobs and raising incomes, thereby contributing to improved access to nutritious food.

This policy brief explores the relationship between trade and sustainability in the agricultural sector in light of present and upcoming challenges in the food system and the environment. After a brief description of the interaction between trade and the different dimensions of sustainable agriculture and a review of recent trends in agricultural trade, the paper provides an overview of existing international governance frameworks in this area and how trade policies and distortions contribute to undermining sustainability. It then reviews possible approaches for trade policy to promote sustainable agricultural production, consumption, and trade, with a particular focus on the role of the World Trade Organization (WTO) and international cooperation.

Box 1. Sustainable Food and Agriculture

According to the Food and Agriculture Organization of the United Nations (FAO, 2022a), to be sustainable, agriculture must meet the needs of present and future generations, while ensuring profitability, environmental health, and social and economic equity. This approach rests on five key principles: increasing productivity, employment and value addition; protecting and enhancing natural resources; improving livelihoods and fostering inclusive growth; enhancing the resilience of people, communities, and ecosystems; and adapting governance to new challenges. Trade and trade policies directly interact with these different dimensions in multiple ways.

2. The Relationship Between Trade and Sustainability in Agriculture: Food Security, Nutrition, Livelihoods, and the Environment

2.1 Food Security

With roughly 80% of the world population living in net food importing countries or relying on imports to meet at least some of its nutrition needs, trade enables countries to purchase food they cannot produce domestically, at affordable prices. Over the coming years, the OECD-FAO Agricultural Outlook 2021-2030 (OECD & FAO, 2021) anticipates large population and income-driven increases in food demand in several Asian and African countries which may not have the resources to generate a commensurate increase in domestic production (Fader et al., 2013).[2] More specifically, the report estimates that the share of imported calories in total consumption will average about 20%, rising to 64% in the Middle East and North Africa region.

2. An estimated 66 countries, mainly in Africa and the Middle East, simply do not have sufficient water resources and land to feed their population.

In this context, trade will be critical to smooth imbalances between food supply and demand—global or regional—and act as a buffer in case of domestic or external shocks. The effects of climate change are expected to affect agricultural consumption as well as production and productivity (WTO, 2021a). Here again, trade is expected to help offset climate-induced production shortfalls and ensure continued access to food.[3]

These interdependences highlight the importance of an open, equitable, and well-functioning trade system. This is particularly relevant considering the relatively low level of internationalization of many agricultural products, for which the share of production traded internationally is on average 23% and even less for key staple foods such as rice and maize (OECD & FAO, 2021). This results in what is often described as "thin markets," where those depending on imports to meet their domestic needs are particularly vulnerable to external shocks or trade policy changes, as illustrated by the food and energy price crises associated with the war in Ukraine. Similarly, during the 2006–08 and 2011–13 food price spikes, unilateral measures in the form of export restrictions applied by large countries to stabilize domestic prices ended up exacerbating world price increases significantly. By reducing their ability to import food at affordable prices, these measures generated further food insecurity in net importing countries (Anania, 2013, p.55). They also undermined confidence in international markets.[4]

2.2 Health and Nutrition Concerns

Beyond its role in meeting calorific needs, trade is critical for nutritional security and a balanced diet of macro- and micronutrients. Low-income countries in particular benefit from trade with respect to most nutrients (Wood et al., 2018).

At the same time, today's global food system relies heavily on a few calorie-dense crops which are suited to large-scale industrial farming. Production of those crops has been incentivized through government support, research and development, and trade, leading to global dietary convergence, sometimes at the expense of dietary diversity and more nutritious food (Benton et al., 2018). This dietary evolution, in turn, has contributed to the spread of diet-related non-communicable diseases such as type 2 diabetes, heart disease, and obesity that affect more than 672 million adults (FAO et al., 2018). Agricultural production can also affect human health through the use of pesticides. While often necessary to secure agricultural production and limit the use of natural resources, pesticides can be problematic when not used according to good agricultural practices. An estimated 2.2 million people are at risk from exposure to agricultural pesticides, with the majority of this population located in developing nations (Hicks, 2012).

2.3 Sustainable Livelihoods

While employment in agriculture has declined globally to reach roughly 900 million people, the sector remains the second source of employment worldwide after services, accounting for 27% of total jobs in 2018. This figure varies significantly by region, ranging from around 5.5% of the labour force in Europe to nearly 50% in developing countries and up to 70% and more in many least developed countries (LDCs) where it represents the main source of livelihoods (FAO, 2020). On average, 43% of the agricultural labour force is made up of women, and in LDCs, two in three women are employed in farming.

Agricultural trade represents a significant source of export earnings and value addition opportunities for many developing countries.

While trade opening can stimulate export opportunities and employment, particularly for high-value horticultural products such as cut flowers, fruits, and vegetables (as in the case of Colombia or Kenya for example), distorted markets can also adversely affect livelihoods as the experience of subsidized maize imports from the United States (US) to Mexico resulting from the North American Free Trade Agreement shows (Cheong et al., 2013). Beyond the risks for import-competing sectors associated with trade in highly subsidized products, liberalization also tends to enhance price transmission and ultimately increases the exposure and vulnerability of domestic producers to world price fluctuations. These can affect both well-established and nascent agricultural production activities, and also disproportionately impact poor consumers for whom expenditure on food accounts for a large share of their household budget.

3. Gouel and Laborde (2019) find for example that when trade flows are constrained, global welfare losses from climate change increase by 76%.

4. This is not to say that countries should rely exclusively on global markets to feed their population. Maintaining an appropriate balance between domestic food production, imports, and public stockholding is largely recognized as a sensible strategy, particularly after the food price crisis of the 2010s.

2.4 Environmental Sustainability

In the absence of effective regulations to protect the environment or mechanisms to reflect environmental costs, the rapid growth of trade can exacerbate environmental challenges associated with the production of agricultural goods. These can include land-management issues that give rise to deforestation and ecosystem deterioration, production practices detrimental to biodiversity like monoculture and the intensive use of fertilizers and pesticides, inefficient water use and water pollution and GHG emissions associated with production (e.g. fossil fuel use and methane emissions from crops and livestock) and transport.

According to the Living Planet Report 2020 of the World Wide Fund For Nature (WWF, 2020), agricultural production is responsible for 80% of global deforestation, 70% of freshwater use, and, when taking into account the food system as a whole, 29% of global GHG emissions. Drivers linked to food production also cause 70% of terrestrial biodiversity loss, with 52% of agricultural land already degraded (UNEP, 2021). While trade in pesticides and fertilizers is widely regulated, including through the Rotterdam Convention, regulations for many chemicals used in agriculture face significant enforcement and implementation issues. Continuous increases in demand for food have also stimulated illegal trade in hazardous pesticides. The United Nations Environment Programme (UNEP) for example estimates that 30% of pesticides sold in developing countries are substandard (UNEP, 2020). Plastic pollution in soils, including due to the expanding use of plastic in agricultural production, also represents a hazard to human and ecosystem health and can carry other contaminants, such as pesticides, into the food chain. The FAO estimates that agricultural soils may suffer from greater quantities of microplastics than oceans (FAO & UNEP, 2021).

A root cause of these negative environmental impacts is insufficient or ineffective local, national, and global policy frameworks and institutions for safeguarding the environment. In this context, the increase in agricultural production enabled by trade opportunities can lead to changes in land and resource use with harmful effects on the environment. For example, while international trade has brought livelihood benefits to the Kenyan horticulture sector, this has come with adverse impacts on the country's lake ecosystems, something that the sector is now working to address (Morgan, 2017). Similarly, expanded international investment in the agricultural sectors of developing countries—including those that export agricultural produce—can result in negative environmental impacts in the absence of a strong regulatory framework.

Recognizing that international trade can be associated with environmental harm does not, however, mean that trade restrictions would necessarily or by default help to lower environmental degradation. For example, emission-intensive commodities such as beef, dairy products, and rice are among the commodities that receive the most trade protection through domestic support or tariff and non-tariff barriers. Such trade distorting and restricting measures can also contribute to goods being produced in a certain location when they could be produced elsewhere with a lower overall environmental footprint.

3. Trends in Agricultural Trade

3.1 Trends in Trade Flows

Global trade in agricultural commodities has grown significantly over the last 30 years to reach $1.5 trillion annually (UNCTAD, n.d.-b)—a trend driven primarily by demand in large emerging economies and other developing countries that now account for one third of total world trade.[5] However, this growth peaked in the early 2010s after the 2008 and 2011 food price spikes and has since stagnated, not least as a result of the slowdown in the global economy and declining commodity prices.[6] While the European Union (EU), the US, and Japan remain significant players in global trade in agricultural commodities, emerging economies like Brazil, China, India, and Turkey have been largely responsible for the growth in trade. In the coming years, most of the demand growth is expected to come from Asia and Africa.

5. It should be noted however that the share of low-income countries in agro-food trade has remained marginal over the last two decades.

6. The FAO (2022b) food price index shows, however, that food prices have reached a historic high, a situation seemingly associated with strong demand increases in countries that have been successful in overcoming the COVID-19 pandemic, and a weaker supply response, especially in countries that are still facing difficulties in vaccinating their citizens.

3.2 The Role of Agri-Food Value Chains

Trade in agricultural products has been accompanied by the emergence of highly complex agricultural and food processing value chains spread across different jurisdictions. This phenomenon is largely driven by the lowering of transport costs and the information and communications technology revolution which allows firms to coordinate their production needs on a real-time basis across various geographical locations. Today, producing a pizza can involve tomato sauce from Morocco, wheat from Ukraine, and cheese from the Netherlands, with the final product being processed and packaged in the US. Globally, the OECD estimates that 24% of agro-food export value comes from imported inputs such as ingredients, machinery, pesticides, fertilizers, packaging, and services (OECD, n.d.-a).

This international fragmentation of agricultural production and trade has been accompanied with progressive corporate concentration along the food value chain, through both horizontal and vertical integration. Today, a small number of large firms dominate entire segments of economic activity along different food value chains. In 2017, for example, three companies controlled half of the global seed market, four corporations shared 68% of the global agrochemical and pesticides markets, and four traders were responsible for over 90% of global grain trade (Lee et al., 2019). This concentration is explained by a range of factors, from the pursuit of economies of scale to the globalization of value chains. While trade and globalized value chains can contribute to a better allocation of resources and efficiency gains, market concentration also raises serious concerns over the relative bargaining power of large and small producers, where the latter receive a limited share of returns, and also of producers and consumers. In addition, concentration can squeeze farm incomes in ways that affect detrimentally the livelihoods of smallholders.

3.3 The Composition of Traded Products

The composition of trade in agricultural products has also experienced significant changes in recent decades. This has largely been driven by urbanization and income growth, resulting in large increases in the consumption of animal products and oils in middle-income countries—a trend which, in turn, stimulates the production of livestock feed including oilseeds like soybeans. In high-income countries, by contrast, per capita consumption of animal protein is expected to stagnate, not least due to health and environmental concerns. Red meat in these societies is being increasingly replaced by poultry, dairy, and, more recently, plant-based products. The significant growth of trade in processed and semi-processed products observed over the last 30 years is related to these trends. While trade in most traditional agricultural export products like wheat, coffee, meat, and vegetables has stagnated or grown at a slow pace, products like palm oil, fruit juice, soft drinks, breakfast cereals, and other processed products have grown rapidly.

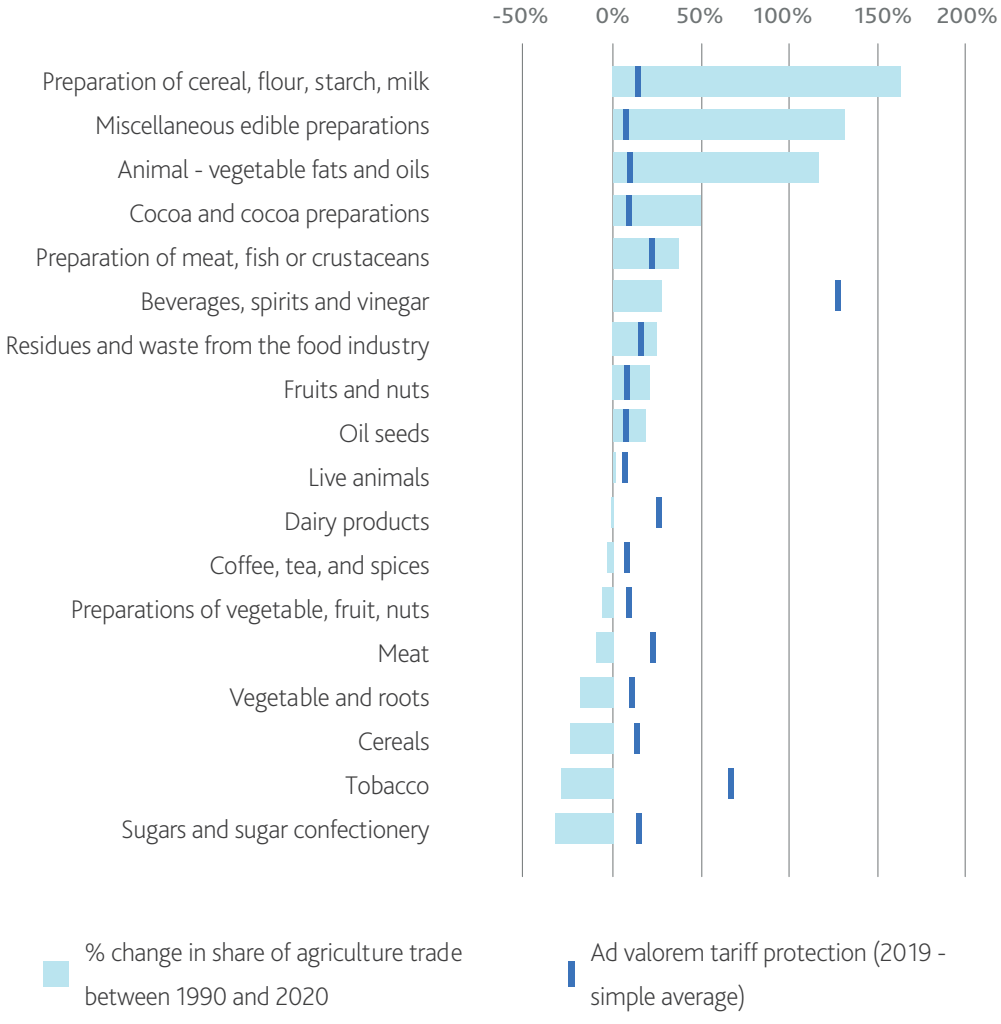
Beyond changes in demand, trade policies also influence these trends. Cereals like maize, rice, and wheat are often considered essential for food security, prompting governments to impose trade restrictions, not least as a means to ensure some level of self-sufficiency. Food safety considerations have also shaped this landscape, with strict sanitary and phytosanitary requirements often applied on animal-derived products like bovine meat and dairy products. By contrast, trade in processed products—usually not perceived by governments as critical for food security—has been largely driven by the private sector, particularly multinational food companies, large retailers, and supermarket chains in the context of international value chains. These products are not only more integrated in these value chains, they also face fewer regulatory barriers.

This duality is illustrated in Figure 1 which looks at the percent change in the share of selected commodities in total agricultural trade. It shows how preparation of cereals or animal and vegetable oils as well as other types of processed food have seen their share in total agricultural exports increase by up to 160% since 1990 while the share of more traditional exports have seen their share decline progressively. The figure also shows the average world tariffs applied to these different product categories and illustrates how products with lower levels of protection have seen their share increase with the notable exception of beverages—a situation explained by the presence of alcoholic beverages in that product group. Overall, the growth in processed food

exports to developing countries has enabled consumers to access cheaper and more diversified sources of food. On the other hand, there are concerns about the risk of processed foods displacing local producers, altering cultural and community practices linked to the production and consumption of food, and fostering the consumption of low nutrition food varieties.

Since the late 2000s, several governments have also encouraged the production of commodities for biofuel through subsidies, blending mandates (i.e. policy mandates on blendiing biofuel ratios in gasoline and diesel fuels), and renewable energy requirements. These domestic policies have contributed to a global increase in demand for sugar cane, vegetable oils, and maize, pushing prices up and prompting concerns that the expansion could affect food availability in certain parts of the world. More broadly, they have strengthened the connection between energy markets and food and agricultural markets at the global level. In the coming years, however, the biofuel sector is expected to expand at a slower pace and its share in the use of feedstock commodities is likely to decline, with the exception of sugar cane (OECD & FAO, 2021). This is largely due to the fact that in the EU and the US policies tend to favour a transition to electric vehicles.

Figure 1. Percent Change in the Share of Selected Products in Total Agricultural Trade Between 1990 and 2020 and Average Levels of Tariff Protection



Source: Author's elaboration based on UN Comtrade (n.d.).

4. The Governance of Global Trade and Sustainable Agriculture

4.1 Overview of Governance Arrangements

Since the last successful round of multilateral trade negotiations (Uruguay Round 1986–1993) and the conclusion of its Agreement on Agriculture, the WTO has become a centrepiece of multilateral trade and agriculture governance. In the absence of a single arrangement governing all facets of the relationship between trade and agriculture, governments have also been pursuing cooperation through a range of other instruments and governance mechanisms at the multilateral, plurilateral, and regional levels. Figure 2 provides a schematic mapping of the different processes relevant to the way in which the WTO addresses the trade and agriculture nexus.[7]

Multilateral discussions on trade are informed by a range of high-level multilateral political declarations and commitments, including the SDGs, and international processes like the UN Food Systems Summit. Other international political processes, such as deliberations under the different structures of the G20, as well as bilateral and regional arrangements also provide broad political guidance to agricultural trade. High-level commitments and declarations are then advanced and operationalized through a range of international or regional institutions with relevance to, and influence over, trade such as regional development banks, economic commissions, specialized UN agencies as well as the International Trade Centre (ITC), the United Nations Conference on Trade and Development (UNCTAD), and the World Bank, research-based institutions like the Consultative Group for International Agricultural Research (CGIAR), and dedicated financing mechanisms like the Aid for Trade Initiative and the Enhanced Integrated Framework (EIF).

These institutions provide spaces for addressing different facets of the trade and sustainable agriculture interface. In the current international context, SDG 2 calls for ending hunger and all forms of malnutrition by 2030, while doubling the agricultural productivity and income of small-scale food producers. It also underlines the need for sustainable and resilient food production systems while strengthening capacity for adaptation to climate change and extreme weather events. According to targets 2.B and 2.C, this goal should be achieved by correcting and preventing trade restrictions and distortions in world agricultural markets and ensuring the proper functioning of food commodity markets. In September 2021, the UN Food Systems Summit placed particular emphasis on the elimination of global hunger by 2030, with member states, private sector leaders, and development institutions also committing their support to the transformation of food systems as a key and crucial element of the SDG agenda.

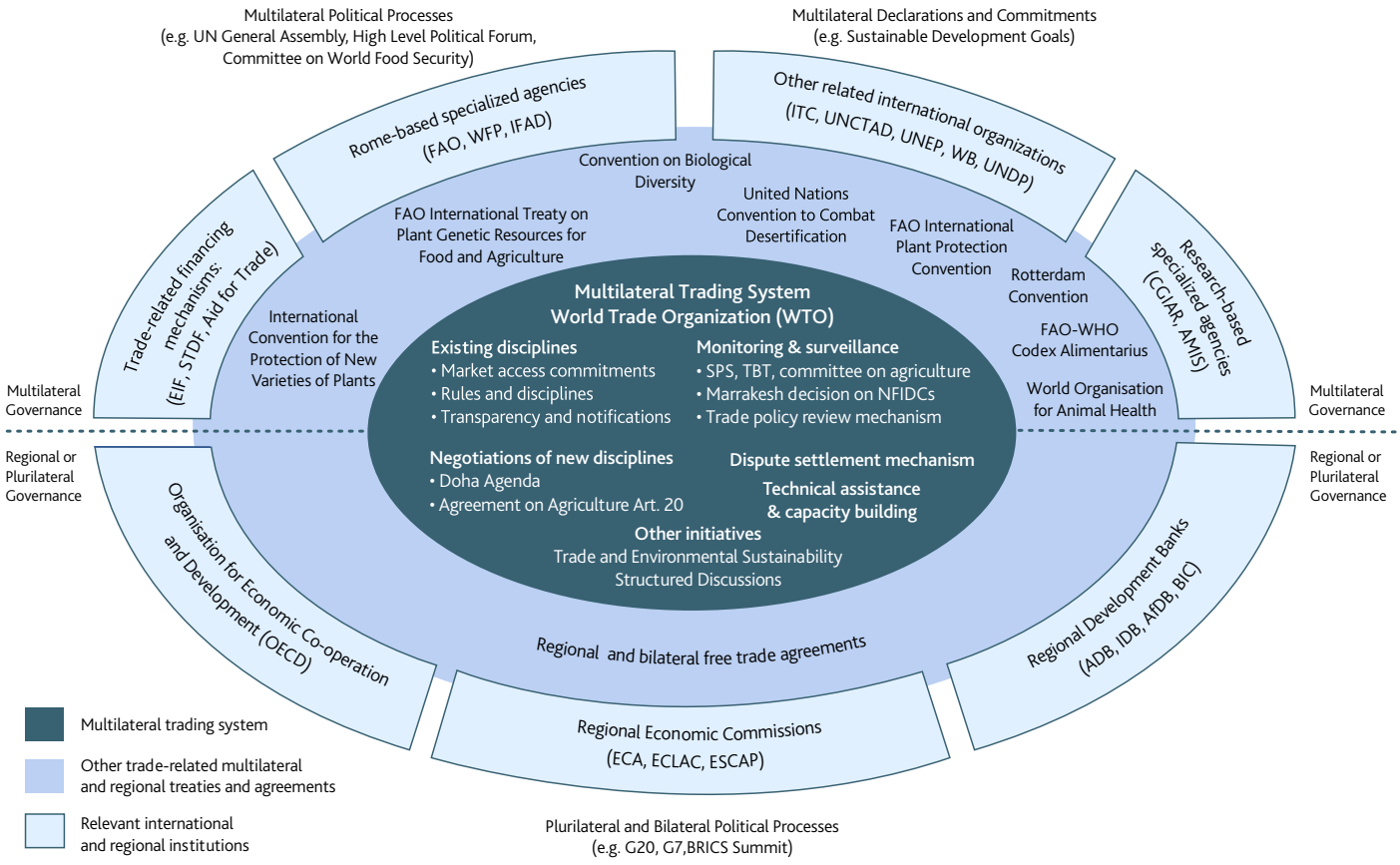
Beyond these high-level commitments, different aspects of the trade and sustainable agricultural nexus are regulated through a range of multilateral and regional agreements. The Codex Alimentarius, for example, develops and adopts food safety standards that serve as a reference for international food trade. The Rotterdam Convention regulates trade in certain chemicals, fertilizers, and pesticides. The International Convention for the Protection of New Varieties of Plants (UPOV Convention) aims to foster innovation and trade in new plant varieties through intellectual property rights. On the environmental front, the FAO International Treaty on Plant Genetic Resources for Food and Agriculture deals with conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use. Similarly, the UN Convention on Biological Diversity deals with the conservation and sustainable use of biodiversity, as well as the fair and equitable sharing of the benefits arising from commercial and other utilization of genetic resources. The convention also formally recognizes the role of indigenous and local communities and their womenfolk. After several delays due to the COVID-19 pandemic, the new Global Biodiversity Framework for 2030 is expected to be agreed and adopted at the 15th meeting of the Conference of Parties (COP15) to the Convention on Biological Diversity in December 2022. Several of the foreseen 2030 targets will likely have direct implications for trade and trade policies (Kettunen, 2022).

7. Annex I provides a description of the main institutions and agreements responsible for trade and sustainable agriculture governance, as listed in Figure 2, and also of the relevant WTO agreements.

Other international instruments of direct relevance to agricultural trade include the UN Convention to Combat Desertification, which deals with issues around land degradation and promotes sustainable land management by restoring drought-affected land, and also aspects of the UN Framework Convention on Climate Change (UNFCCC).

While the Paris Agreement—the legally binding international treaty on climate change adopted in 2015—does not address agriculture directly, agricultural reforms feature in the nationally determined contributions submitted by many countries as part of their efforts to meet climate goals. The agricultural sector is also a priority sector noted in many national adaptation plans established under the Cancun Adaptation Framework in 2011, especially those of vulnerable developing countries. In 2021, at the 26th Conference of Parties (COP26) of the UNFCCC, the governments of over 140 countries signed the Glasgow Leaders' Declaration on Forest and Land Use in which they committed to working collectively to halt and reverse forest loss and land degradation by 2030, including by promoting trade and development policies that do not drive deforestation and land degradation (United Nations Climate Change Conference, 2021b). Furthermore, the governments of 28 countries—including key global exporters and importers of agricultural commodities such as Brazil, the EU, and the US—published a joint roadmap for cooperation on trade in forest and agricultural commodities as part of the Dialogue on Forests, Agriculture and Commodity Trade (FACT) launched at COP26 (United Nations Climate Change Conference, 2021a). In November 2021, the EU released its proposal for a legislative framework that would only allow deforestation-free products to enter the EU market. In December 2022, the EU adopted a mandatory due diligence requirement to ensure products linked to illegal production and deforestation are not placed on or exported from the EU market.

Figure 2. Multilateral Trade and Agriculture Governance and Other Trade-Relevant Governing Institutions



Source: Author's elaboration.

Note: NFIDCs stands for net food-importing developing countries.

4.2 What is the Multilateral Framework for Agricultural Trade?

The WTO's functions can be broadly divided into six categories. First, the multilateral body facilitates trade negotiations among members, defining the international legal framework governing global trade including on agriculture. Second, it monitors the implementation of existing rules and disciplines based on notifications submitted by members and reviews the trade policies of members on a regular basis. Third, it provides a forum for policy deliberation and dialogue through different committees and working groups such as the Committee on Trade and Environment. Fourth, the WTO acts as a dispute settlement body when there is a trade conflict between its member states. Fifth, the WTO conducts capacity building, technical assistance, and training programmes for developing countries, and is the host of the Aid for Trade initiative which seeks to mobilize resources to address the trade-related constraints identified by developing and LDCs. Finally, the WTO has an outreach function to communicate and collaborate with governments, stakeholders, and international organizations.

Agricultural trade features under of these different functions. This subsection focuses on the discussions that are most relevant to supporting the sustainability of the agricultural sector in regard to the issues identified in the preceding sections of this brief. It starts with an overview of the multilateral trade rules that are particularly relevant to the trade and sustainable agriculture debate. It then reviews how agriculture is addressed in the main WTO regular committees charged with monitoring and implementation of these rules. Finally, it provides an update on the status of ongoing negotiations in this area.

Existing WTO Rules As They Pertain to Sustainable Agriculture

While WTO rules impose a number of restrictions on domestic policies, they also provide significant policy space to protect the environment, including plant, animal, and human life, as well as low-income and resource-poor producers. The main WTO rules applied to agriculture are found in the Agreement on Agriculture, which provides a framework for the long-term reform of trade and domestic policies to establish a "fair and market-oriented agriculture trading system" (WTO, 1994). The Agreement on Agriculture is structured around three pillars dealing respectively with: (i) market access including tariffs, tariff rate quotas, safeguard clauses, and import and export quantitative restrictions; (ii) domestic support measures in the form of agricultural subsidies; and (iii) export competition including export subsidies, export credits, food aid, and state trading enterprises. In all of these areas, members have undertaken specific liberalization commitments enshrined in their individual schedules of concessions. The agreement also considers non-trade concerns, including food security and the need to protect the environment, and provides for some special and differential treatment for developing countries. A decision on Measures Concerning the Possible Negative Effects of the Reform Programme on Least-Developed and Net Food-importing Developing Countries also forms part of the overall outcome of the Uruguay Round negotiations on agriculture (for further details on the Agreement on Agriculture see Box 2).

Beyond the Agreement on Agriculture, several other WTO agreements are relevant to trade in food and agricultural products, for instance the Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures, which deals with food safety requirements, and the Technical Barriers to Trade (TBT) Agreement, which deals with regulations, standards, and conformity assessment procedures. These agreements essentially seek to strike a balance between the right to regulate to achieve legitimate public policy objectives like protecting the environment and human, animal, or plant health, and the need to avoid unnecessary barriers to trade. To achieve this, both agreements encourage science-based, non-discriminatory approaches as well as the use of international standards and promote harmonization, equivalences, and mutual recognition of technical regulations and conformity assessment procedures. They also request that members notify the WTO membership about any measure, including environmental measures, with potential trade effects and allow other trading partners to provide comments.

In addition, certain provisions under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) are directly relevant to sustainable agriculture. Article 27.3(b) in particular provides that members may exclude plants, animals, other than micro-organisms, and "essentially" biological processes from patentability. However, plant varieties have to

be protected either through patents or a "sui generis" system created for the purpose (e.g. like the one provided under the UPOV Convention or any other effective system). The extent to which these provisions are consistent with the UN Convention on Biological Diversity and the FAO International Treaty on Plant Genetic Resources for Food and Agriculture, and whether they provide for sufficient policy space to protect traditional knowledge, particularly for indigenous peoples and local communities, associated with biodiversity as well as farmers' rights to exchange and replant seeds, are a long-standing source of controversy. Another relevant TRIPS provision is Article 66.2, which calls on developed countries to provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to LDCs. While the article does not mention agriculture explicitly, discussions in this area have largely focused on agriculture as described below.

Box 2. WTO Rules on Agricultural Trade in a Nutshell

WTO disciplines under the Agreement on Agriculture are organized around the three pillars of market access, export competition, and domestic support.

Market access. Members' commitments include binding tariffs at a maximum authorized level for each agricultural product and disciplines to administer tariff rate quotas.

Export competition. The 2015 Nairobi Ministerial decision establishes a standstill clause on export subsidies, and a prohibition against maintaining or granting export subsidies with phasing out period over a specific timeline. It also introduces initial disciplines on export credits and on food aid with provisions aimed at avoiding displacement of locally produced food.

Domestic support. Subsidies are organized under different categories or "boxes" according to their trade-distorting effect. Overall, the disciplines follow a traffic light approach aimed at limiting the most trade-distorting forms of support while establishing less stringent disciplines on measures that generate less distortions. The most trade-distorting forms of domestic support are capped under the "amber box" through the so-called aggregate measurement of support (AMS), which covers both product-specific subsidies targeted at particular commodities and non-product-specific subsidies such as input subsidies (e.g. for fertilizers, pesticides, and machinery) or subsidized credit. Non- or minimally trade-distorting subsidies are included under the "green box" and allowed without limitations. These include general services (such as research or pest control services), consumer subsidies (such as food stamp programmes), income support, or environmental payments. "Blue box" support measures correspond to payments under production-limiting programmes and are also allowed without limitation. Finally, Article 6.2 of the agreement allows developing countries to provide without limitations generally available investment subsidies or input subsidies targeting low-income or resource-poor producers as well as support to encourage diversification away from the cultivation of illicit narcotic crops.

Implementation and Monitoring of Existing Commitments in Agriculture and Relevance to Sustainability

Regular committees under the different WTO agreements oversee the implementation of members' commitments, review notifications, and provide opportunities to consult on matters relating to compliance. Issues pertaining to the implementation of the Agreement on Agriculture are addressed under the regular sessions of the Committee on Agriculture. It reviews notifications circulated by members and provides an opportunity for members to raise questions or request clarifications. Discussions under the SPS and TBT committees also allow members to raise specific trade concerns regarding existing or upcoming regulations, standards, or conformity assessment procedures, and provide a multilateral space to address trade frictions in a pre-emptive, non-litigious, and cooperative manner (Wijkström, 2015).

At the 2013 Bali Ministerial Conference, WTO members adopted a Monitoring Mechanism on special and differential treatment. The mechanism meets in dedicated sessions of the Committee on Trade and Development and provides members an opportunity to review all aspects of the implementation of special and differential provisions contained in WTO agreements and decisions. In the area of

technology transfer, agriculture has been addressed in the context of the WTO Working Group on Trade and Transfer of Technology established at the 2001 Doha Ministerial Conference to examine the relationship between trade and the transfer of technology from developed to developing countries. It has also been a key topic in the review of TRIPS Article 66.2 implementation, with agriculture and the environment featuring high on the list of technology transfer programmes reported by developed countries under this article.

With respect to the environment, the Committee on Trade and Environment provides an avenue to address sustainability concerns even if agriculture is not particularly singled out as a topic for discussion in the committee's work programme. Finally, the WTO Secretariat also facilitates the work of the Trade Policy Review Mechanism, which provides a regular inventory of members' trade policies and related practices, and functions as an avenue to increase transparency and understanding between members. In particular, the reviews (which consist of a report by the government and one by the Secretariat) and associated meetings, afford members the opportunity to ask specific questions on existing policies, including those linked to sustainability of the agricultural sector.

The WTO Secretariat also administers an environmental database that records all environment-related trade notifications submitted by WTO members as well as environmental measures and policies mentioned in the trade policy reviews. Figure 3 provides an overview of environmental measures in the agricultural sector notified to the WTO between 2009 and 2020. It shows that environmental issues linked to agricultural trade are of keen interest to members in general, with some key topics taking centre stage. There is a large preponderance of subsidies, in the form of grants or direct payments as well as non-monetary support (e.g. research, infrastructure, and extension and advisory services), followed by TBT and SPS measures including technical regulations and conformity assessment procedures. As shown in Figure 3, the stated environmental policy objectives of the notified measures vary significantly and range from sustainable agriculture management to reforestation through biodiversity, water, and soil conservation, and climate change mitigation and adaptation.

How Are Agriculture and Sustainability Considerations Addressed in Current WTO Negotiations?

Article 20 of the Agreement on Agriculture envisages an ongoing process of reform to reduce agricultural support and protection, taking into account non-trade concerns including the environment but also special and differential treatment for developing countries with a view to establishing a "fair and market-oriented agricultural trading system." Agricultural negotiations under the newly formed WTO began in 1999 and were incorporated two years later in the Doha Round, known as the Doha Development Agenda, which is the latest round of trade negotiations among the WTO membership. These mandated talks aim at "substantial improvements in market access; reductions of, with a view to phasing out, all forms of export subsidies; and substantial reductions in trade-distorting domestic support." Trade ministers also agreed that "special and differential treatment for developing countries shall be an integral part of all elements of the negotiations."

After several years of difficult negotiations characterized by widely diverging positions, a first outcome was achieved at the 2015 Nairobi Ministerial Conference when members agreed to gradually eliminate export subsidies and to discipline other forms of measures with similar effects. However, at the Nairobi meeting, ministers could not reaffirm the Doha mandate by consensus, generating significant uncertainties regarding the continuation of the negotiating process. Since then, agricultural discussions have nonetheless continued, with a particular focus on eight key areas: (i) domestic support; (ii) market access including tariff protection; (iii) export competition including export subsidies and measures having comparable effects; (iv) export prohibitions and restrictions; (v) cotton subsidies and market access; (vi) public stockholding for food security purposes including how farm subsidy rules should apply when developing countries buy food at government-set prices; (vii) a special safeguard mechanism to allow developing countries to raise tariffs temporarily in the event of a sudden surge in import volumes or price depression; and (viii) transparency and notifications.

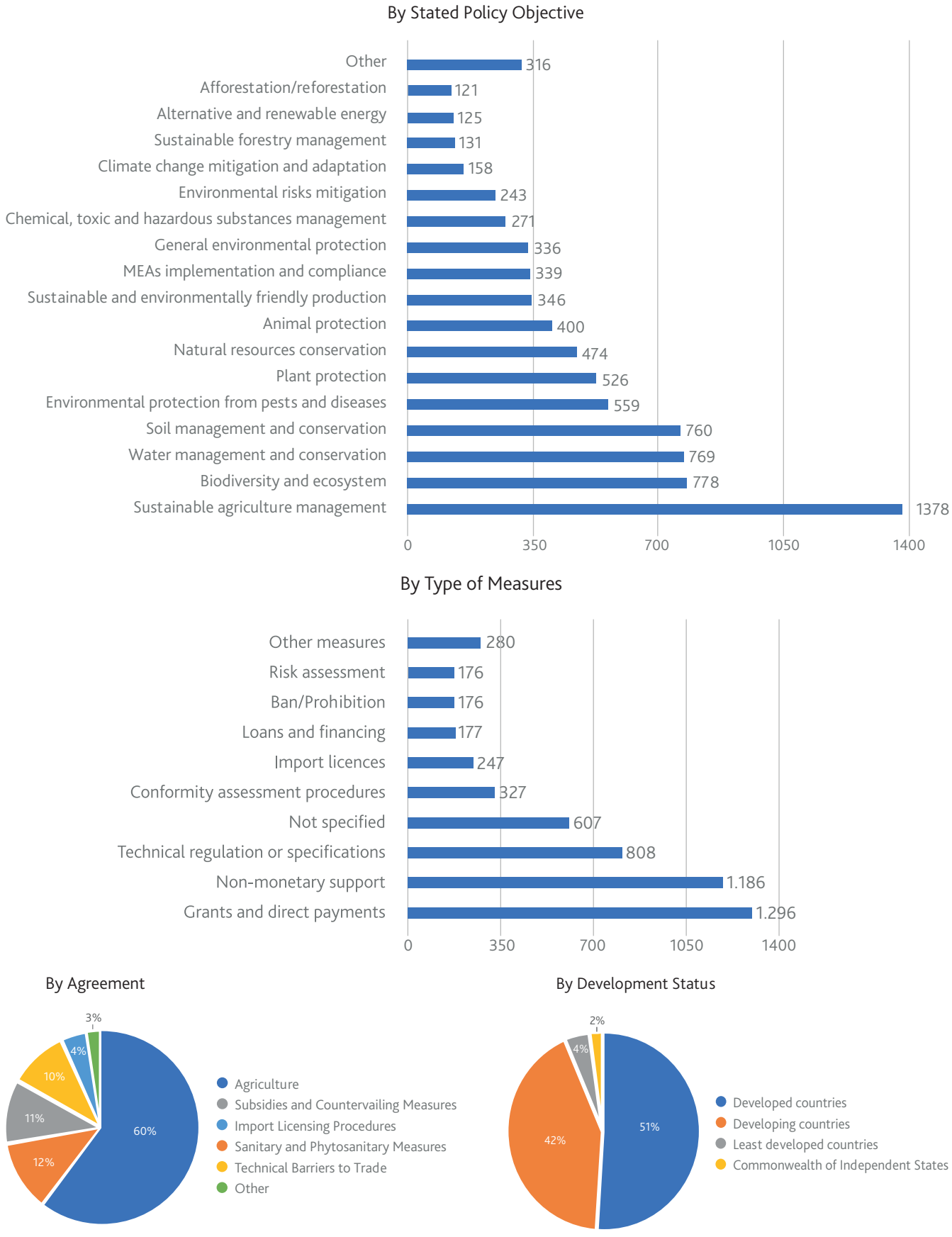
At the Twelfth WTO Ministerial Conference (MC12) in June 2022, however, members failed to reach agreement on a set of guidelines and principles to continue negotiations, generating further uncertainty about the prospects for progress in this area. While the general mandate to continue the reform process enshrined in Article 20 of the Agreement on Agriculture remains valid, persistent disagreements around how to move these talks forward will likely perpetuate the ongoing paralysis observed in those talks. Members nonetheless adopted a landmark decision at MC12 not to impose export prohibitions or restrictions on foodstuffs purchased for non-commercial humanitarian purposes by the World Food Programme (WTO, 2022a). They also issued a Ministerial Declaration on the Emergency Response to Food Insecurity in reaction to the trade disruptions, record prices, and excessive volatility resulting, among others , from the COVID-19 pandemic and the conflict in Ukraine (WTO, 2022b).

The declaration cites members' determination to "make progress towards the achievement of a fair and market-oriented agricultural trading system, ending hunger, achieving food security and improved nutrition, promoting sustainable agriculture and food systems, and implement resilient agricultural practices that enhance productivity and production." Ministers also commit to take concrete steps to "facilitate trade and improve the functioning and long-term resilience of global markets for food and agriculture, including cereals, fertilizers, and other agriculture production inputs" with particular consideration for the specific needs and circumstances of least developed and net food-importing developing countries (NFIDCs).

Paragraph 8 also reaffirms the importance of effective implementation and monitoring of the Marrakesh Decision on NFIDCs, and commits to having a dedicated work programme in the regular Committee on Agriculture to examine how this decision could be made more effective.

The work programme shall in particular consider the needs of LDCs and NFIDCs to increase their resilience in responding to acute food instability. In subsequent discussions, members agreed to: (i) exchange information under the work programme; (ii) identify the needs of LDCs and NFIDCs to build long-term resilience and preparedness to respond to acute future crises; (iii) assess the extent to which the multilateral trade system supports LDCs and NFIDCs to respond to those challenges; and (iv) make recommendations to the Committee on Agriculture by November 2023. They also highlighted a set of thematic areas for discussion under the work programme covering access to international markets, the financing of food imports, building agriculture and production resilience in LDCs and NFIDCs, and a set of horizontal issues.

Figure 3. Environmental Measures in the Agricultural Sector Notified to the WTO (2009–2020)



Source: Author's elaboration based on WTO (n.d.).

5. Trade Policies and Distortions That Undermine Sustainability

With the Agreement on Agriculture, trade barriers have gradually been reduced in recent decades. This process has been accelerated through unilateral reforms and trade liberalization resulting from regional and bilateral trade agreements. Still, agricultural trade remains one of the most distorted sectors and such distortions undermine sustainability in a variety of ways.

5.1 Subsidizing Production

The agricultural sector is highly subsidized, both in developed countries and increasingly in emerging economies, with most subsidies concentrated on a limited range of commodities such as rice, wheat, maize, dairy products, beef, pork, and poultry (see below). For some analysts, these subsidies represent sensible policy responses to market failures affecting the sector and can play a useful role in reducing income disparities or promoting sustainable production methods. Critics, on the other hand, point to their market-distorting effects, their unequal distribution, and the perverse environmental consequences they create by artificially lowering global prices and incentivizing unsustainable use of natural resources.[8]

Overall, global support to producers is currently estimated at almost $540 billion a year with two-thirds considered price-distorting and harmful to the environment (FAO, UNDP, and UNEP, 2021). In recent years, the rise of emerging economies has also been accompanied by increased levels of support to agriculture, reflecting enhanced budgetary capacity in those growing economies. These trends are illustrated in Figure 4.

Figure 5 looks at single commodity transfers—i.e. support that is clearly attributed to specific commodities in the OECD producer support database. It shows the 10 commodities that receive the highest amount of support. Overall, three quarters of total single commodity transfers are concentrated on five main agricultural commodities, namely rice, maize, pig meat, beef and veal, and milk products. These are followed by wheat, poultry, cotton, sugar, and sheep meat.

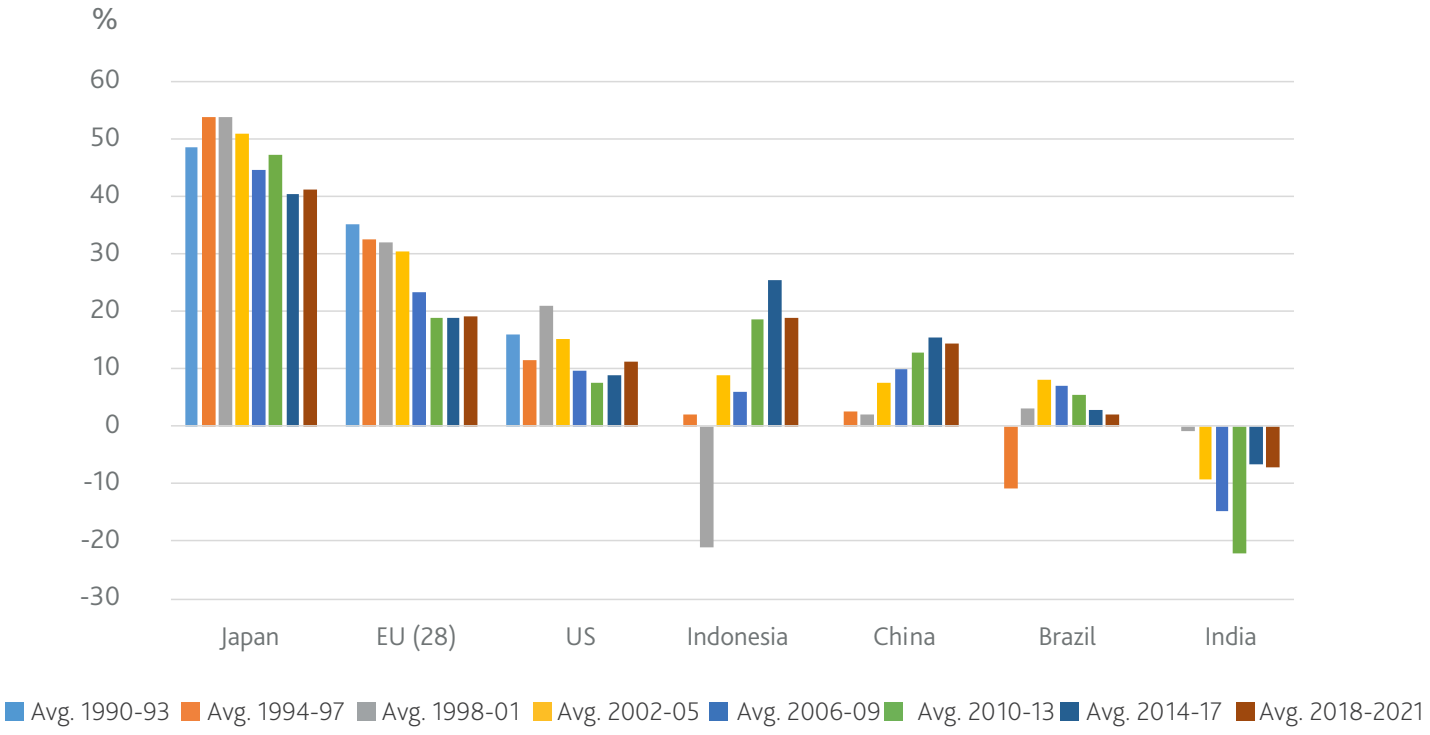
This high level of protection concentrated around a narrow set of commodities illustrates the role that such policies play in fostering production through incentives to producers, shifting production towards those commodities at the expense of others. From a sustainable agriculture perspective, support programmes that are directly linked to the volumes produced tend to intensify the negative environmental effects associated with certain agriculture practices, including those with a high environmental footprint. Input subsidies—e.g. for fuel or electricity—tend to foster unsustainable resource consumption or the overuse of pesticides and fertilizers.[9] In 2021, the FAO, United Nations Development Programme (UNDP), and UNEP estimated that removing fiscal subsidies to agriculture would cut GHG emissions by an estimated 11.3 million tonnes of CO2 by 2030 (FAO, UNDP, and UNEP, 2021).

Despite the environmental challenges posed by existing support, the political economy of subsidies is such that removing environmentally harmful support once it has been granted is difficult, with most attempts at cutting support facing significant political resistance. Past experience shows that reform is more likely to succeed if it focuses on repurposing agricultural support by promoting a gradual shift from product support to income support and ultimately supporting the delivery of global public goods such as biodiversity conservation, water management, GHG emissions reduction, or landscape preservation. While this may represent a sensible approach in more advanced economies, in a wide range of developing countries, promoting more sustainable and climate-smart practices needs to be balanced with the imperative of growing production and building resilience to meet food security objectives. In many cases, supporting inputs such as seeds, fertilizers, and pesticides is also easier to implement compared to directly supporting income or environmental services which require more sophisticated payment mechanisms. A further consideration is that many developing countries lack sufficient resources to provide extensive agricultural support, including to support environmental objectives.

8. Annex III provides an overview of the evolution of the different types of farm subsidies notified to the WTO since 2012 for selected members.

9. Electricity and irrigation subsidies, for example, have long contributed to unsustainable use of ground water resources through over-incentivizing water pumping.

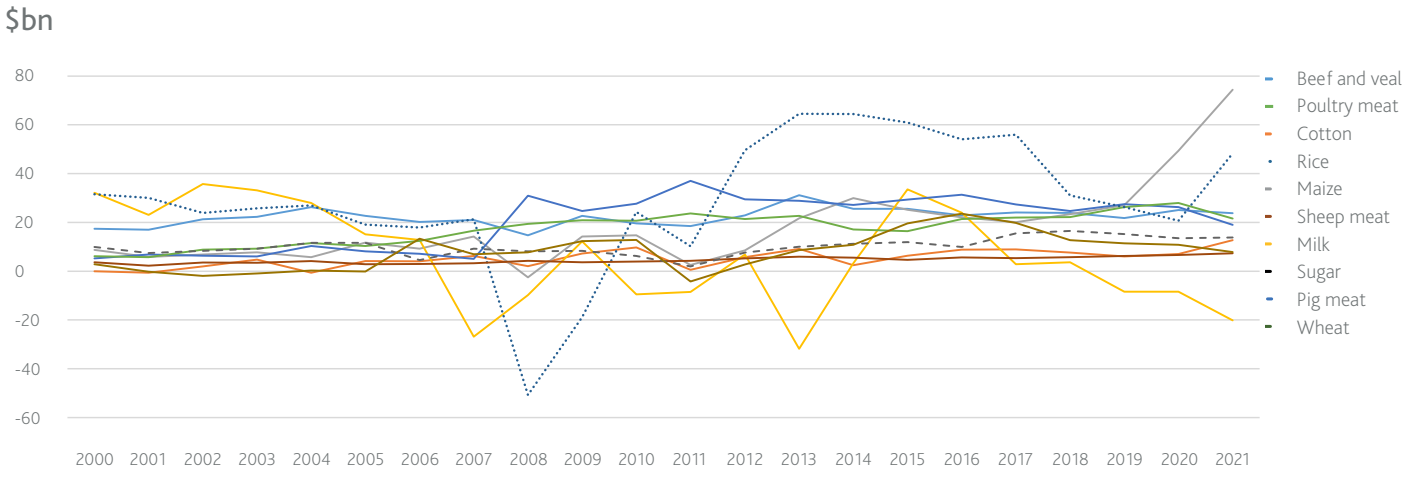
Figure 4. Producer Support Estimate as a Percentage of Gross Farm Income (1990–2021)



Note: The above figure shows convergence over time in support to farmers as defined by the producer support estimate (PSE) of the OECD. Under the PSE, transfers consist not only of direct budgetary disbursements, but also tax concessions, as well as market price support such as minimum guaranteed prices or tariff barriers which create a gap between domestic market prices and international prices for a commodity.[10]

Source: Author's calculation based on OECD (n.d.-b).

Figure 5. Single Commoditiy Transfers by Top 10 Commodities (2000–2021)



Source: Author's calculation based on OECD (n.d.-b).

10. Negative levels of support in India and in the early days of Brazil's and Indonesia's support reflect that fact that during those years producer prices remained below comparable international prices for a large set of commodities. In other words, producers have been implicitly taxed rather than subsidized.Ad valorem tariffs refer to tariffs expressed as a percentage of the value of the good.

5.2 Border Measures

A significant component of agricultural trade barriers is border measures in the form of tariffs, quotas, safeguard measures, and export restrictions.[11]

While tariffs have partially decreased for many agricultural products in recent years, several tariff peaks remain, often concentrated on a handful of highly sensitive tariff lines such as meat, dairy products, groundnuts, rice, certain beverages, and tobacco. These peaks usually take the form of non ad valorem tariffs, including minimum import prices or specific tariffs based on the volume of imports.[12]

These tariff policies tend to restrict imports of key staple foods and cereals in an effort to isolate domestic producers from international competition and ensure domestic food self-sufficiency. As with subsidies, they often protect products with significant environmental footprints. In doing so, they allow unsustainable production to remain economically viable, including when the same goods could be produced with greater resource and energy efficiency, and therefore at a possible lower environmental cost, elsewhere.

Tariff escalations that impose higher duties on processed products compared to raw material affect value addition and development prospects in developing countries. At the same time, as highlighted in section 3, trade in a wide range of processed food products tends to face fewer tariff protections. However, in the absence of appropriate regulatory and policy safeguards, these products are often associated with significant adverse effects on the environment including deforestation, ecosystem degradation, and GHG emissions. In such instances, the absence of tariff barriers facilitates the growth of trade and exacerbates environmental challenges.

6. How Can International Trade Policy Promote Sustainable Agriculture?

Confronted with the challenges associated with agricultural production and the food system described in the preceding sections, governments attempting to promote more environmentally sustainable agricultural practices or production methods in the context of multilateral trade rules have a range of trade and trade-related policy instruments at their disposal. These can be broadly organized under two categories: measures providing incentives to encourage sustainable production and trade and measures designed to discourage unsustainable practices.[13] In each category, a cross-cutting focus on supporting a just and effective green transition could be integrated.

The measures themselves can take several forms including: (i) measures at the border targeting mostly imports; (ii) economic incentives such as subsidies targeting mostly domestic producers; (iii) regulatory measures of a voluntary or mandatory nature, targeting both domestic producers and imports; and (iv) international cooperation to support the transition to sustainable production and trade, for example through technical assistance and capacity building, transfer of technology, trade finance, or special and differential treatment. Table 1 provides an overview of these different approaches including examples under each category.

11. Annex II provides examples of different tariff structures by looking at both bound tariffs and applied tariffs.

12. Ad valorem tariffs refer to tariffs expressed as a percentage of the value of the good.

13. Note that for practical reasons, trade-related policy measures aimed at supporting farmers' income, rural development, or food and livelihood security such as public stockholding policies, safeguard measures in case of price depression or import surges, and export restrictions in case of critical food shortages are not addressed, even if they form an integral part of the sustainability equation.

Table 1. Trade and Trade-Related Policy Tools to Promote Sustainable Agriculture

Measures		Discouraging unsustainable production and trade	Encouraging sustainable production, consumption, and trade
Trade and trade-related policy measures	Border measures	▪ Removing tariff protection on domestically produced goods with high environmental footprint (e.g. meat products) ▪ Applying market-correcting measures on imports to internalize negative environmental externalities ▪ Import and export bans of harmful pesticides and hazardous chemicals	▪ Conditioning market access concessions to compliance with specific sustainability requirements (e.g. through tariff rate quotas or trade preferences) ▪ Removing tariff and non-tariff measures on environmentally preferable products and services) ▪ Trade facilitation measures for healthier but perishable products (e.g. fruits and vegetables)
	Economic incentives	▪ Removing environmentally harmful subsidies (e.g. subsidies for fossil fuels, fertilizers, pesticides, etc.) ▪ Removing domestic support encouraging the production of goods with high environmental footprint ▪ Removing free allowances on carbon-intensive goods	▪ Payments for environmental purposes (e.g. conditioning the provision of subsidies to environmental performances, cross compliance schemes) ▪ Payments for extension and advisory services, research, or pest and disease control, including for alternatives to pesticides and hazardous chemicals that are appropriate for local climate and environmental conditions ▪ Subsidizing the consumption and distribution of healthy food
	Regulatory Measures	▪ Food safety standards and regulations (e.g. maximum pesticide residue limits, nutrition requirements for processes foods) ▪ Mandatory environmental requirements (e.g. requirements concerning the acceptable level of nutrients, airborne pollutants, wildlife and habitat protection) ▪ Mandatory due diligence requirements (e.g. on deforestation-free supply chains)	▪ Mandatory labelling schemes indicating the nutritious content of food (e.g. traffic light approaches for processed food) ▪ Voluntary standards and environmental labelling ▪ Private standards (e.g. carbon footprint)
International cooperation	Technical assistance & capacity building and support measures	▪ Support for subsidy reform including repurposing subsidies to advance sustainability goals.	▪ Technical assistance and capacity building, transfer of technology, financing, and flexibilities in trade agreements to promote a just transition, invest in sustainable production methods and technologies, and meet environmental requirements in export markets

Source: Author's elaboration.

6.1 Harnessing Trade and Trade Policies to Discourage Unsustainable Production

A first approach to promoting more sustainable agricultural production through trade policy tools is to remove perverse trade-related incentives that encourage unsustainable practices or to apply market-correcting measures to internalize the negative environmental and social externalities associated with agriculture. developing countries.

Border Measures

Discouraging unsustainable production can be achieved by removing domestic protection for commodities associated with high environmental footprints and negative social impacts. (As noted above, tariffs and particularly tariff peaks and tariff escalations on sensitive products can allow unsustainable production to remain economically viable). The positive sustainability outcomes here assume that similar goods can be produced more efficiently elsewhere and at a lower environmental cost.

In practice, however, market prices rarely reflect the environmental or social costs of producing a particular good—a situation that often raises concerns on the part of domestic producers required to meet higher environmental production standards than those applicable to imported goods.[14] This has prompted calls to impose measures at the border, such as bans, restrictions, or higher duties on imports that do not comply with a core set of sustainability requirements. On the other hand, exporters, particularly in developing countries, have pointed to the large amount of support in the form of subsidies provided to producers in more advanced economies to reduce costs and comply with environmental requirements. In the context of climate change, countries are considering a range of border measures to address concerns about the carbon footprint of agricultural products as well as concerns about carbon leakage and competitiveness. While the EU's proposal for a Carbon Border Adjustment Mechanism does not include agricultural products, there is a possibility that the EU, or other countries, may choose to expand product coverage or adopt other climate-related trade measures that apply to agricultural products.

The unilateral use of tariff barriers to internalize environmental or social costs remains however highly controversial in the multilateral trade setting, with exporting countries arguing that such restrictions could be illegal under WTO law and constitute disguised protectionism. In this respect, a less discriminatory approach could consist in imposing an internal tax, applied equally to imported and domestic goods that do not comply with certain environmental requirements. Tariff barriers to internalize environmental costs also raise significant conceptual and practical challenges, such as how to determine and measure accurately the cost of environmental externalities—such as soil erosion, deforestation, or GHG emissions—that are generated at the production stage but are not reflected in the price of final products.

Additionally, other border measures could include a ban on the import or export of pesticides and chemicals considered harmful to the environment or human health. To the extent that import restrictions are implemented in conjunction with restrictions on domestic production or consumption, such measures would not violate WTO laws.

Economic Incentives

Another option is to remove perverse economic incentives, starting with inefficient fossil fuel subsidies and environmentally harmful subsidies linked to production outputs or inputs. In addition to the GHG emissions they generate, fossil fuel subsidies also affect markets for renewable energy (including biofuels), the cost of operating farm machinery, transport costs, heating costs, and cold storage costs. Beyond fossil fuels, farm subsidies linked to production outputs or inputs tend to create market distortions—usually affecting poorer producers in third countries who do not have the financial resources to provide equivalent support or compete with highly subsidized imports—and contribute to bringing marginal land into production, promoting unsustainable types of intensification, and incentivizing the excessive use of pesticides, water, and fertilizers (Bellmann, 2019; Institute of International Trade, 2022).

14. For example, domestic producers required to maintain hedgerows or woodlands often argue that they are confronted with unfair competition from foreign producers not bound by the same requirements.

As highlighted in a recent report by the FAO, UNDP, and UNEP (2021), emission-intensive commodities like beef, dairy products, and rice tend to receive the most subsidies worldwide, despite the potentially negative externalities and the disincentives such support generates for the production of foods like fruits and vegetables. A possible approach might therefore consist in reforming or repurposing these incentives for more sustainable practices. Such policies must however be balanced against the role that some of these commodities, like rice and sugar for instance, play in supporting livelihoods and food security, particularly in developing countries. For several developing countries that can afford to subsidize agriculture, supporting inputs or access to credit as envisaged under Article 6.2 of the Agreement on Agriculture is the only practical way to boost production and meet food security needs.

Regulatory Measures

A third type of instrument relates to mandatory regulatory measures that impose specific environmental requirements on producers. Examples include both product-related requirements such as food safety standards (e.g. maximum pesticides residue limits) and production-related requirements (e.g. related to the use of nutrients and airborne pollutants, wildlife and habitat protection, or animal welfare). More recently, initiatives are being developed, notably by the EU and the United Kingdom, to impose mandatory due diligence requirements to promote deforestation-free value chains. Similarly, calls are emerging from several quarters to introduce mirror clauses in trade agreements to ensure that domestic production standards also apply to imported products.[15] Product-related requirements essentially deal with the quality of the final good and can be more easily applied to imports, whereas production-related requirements establish obligations regarding certain production methods which are not necessarily visible in the final product. Applying these to imports is more difficult, not least given the challenges in ensuring compliance. It also raises legal questions under the multilateral trading system on the extent to which market access can be differentiated between products based on processes and production methods.[16]

International Cooperation

Governments can also support efforts in developing countries to remove perverse incentives, for example by supporting subsidy reforms through technical assistance and capacity building under the Aid for Trade initiative. They can also provide assistance to repurpose environmentally harmful agricultural subsidies and direct support to foster access to the technologies and finance needed for the sustainable production of goods with a high environmental footprint. This can be done by refocusing subsidies on income support for poor farmers or support to rural communities which addresses food security and social objectives while removing incentives for unsustainable production methods.

6.2 Promoting Sustainable Production and Trade

The second approach to promoting more sustainable agricultural production is to use trade policy tools to provide positive incentives to shift production towards more sustainable patterns.

Border Measures

At the border, the shift to sustainable production can be enabled by promoting trade in environmental goods and services. In 2001, the Doha Ministerial Declaration instructed WTO members to negotiate the reduction or, as appropriate, elimination of tariff and non-tariff barriers on environmental goods and services. In light of persistent disagreement among members on the types of goods and services that should qualify as "environmental" and the approach to liberalize them, a subgroup of 46 WTO members launched in 2014 a plurilateral initiative for an Environmental Goods Agreement. The talks initially built on a 2012 decision by Asia-Pacific Economic Cooperation economies to cut most favoured nation tariffs voluntarily to 5% or less on 54 environmental goods. During subsequent negotiations, members collectively identified around 300 goods for further liberalization but ultimately failed to reach consensus. Since December 2016, these negotiations have not been active.

15. See for example Baldon et al. (2021).

16. An early 1984 ruling on the well-known "tuna-dolphin" case under the General Agreement on Tariffs and Trade (GATT) originally suggested that a WTO member could not discriminate between imported products based on how they were produced when this would not be reflected in the final characteristics of the product. This ruling sparked outcry among environmentalists at the time and, in the end, jurisprudence was reversed in the landmark WTO "shrimp-turtle" case in 1997, when the Appellate Body considered that general exceptions under multilateral trade rules (GATT Article XX) could justify a trade-restricting measure based on the processes and production methods of a product if the measure aims at protecting an "exhaustible natural resource." The issue remains however highly controversial among WTO members with different views on what kinds of measures are, or should be permissible and in what circumstances.

A challenging aspect of these talks since they started has been to define which products or services might qualify for accelerated liberalization. To date, several goods have been proposed in relation to sustainable food production like organic agricultural products and also water and soil treatment equipment or biomass boilers. Similarly, trade in services aimed at helping producers install or use specific environmental technologies could include, for example, advisory services on the use of drip irrigation technology and other services related to agriculture. Beyond tariffs, governments could also establish enhanced trade facilitation measures. For example, given the perishability of many fruit and vegetable products, measures could be introduced to ease transit at international borders, thereby reducing waiting times, or to improve sustainable cold storage (Lee et al., 2019).

Alternatively, governments could provide more favourable market access concessions on products that comply with specific sustainability requirements, for example by linking tariff preferences to products that have a sustainability certification. The EU's Generalized Scheme of Preferences includes a specific and more generous preferential scheme, known as the Generalized Scheme of Preferences Plus, open to countries that implement 27 international conventions related to human rights, labour rights, protection of the environment, and good governance. Sustainability requirements are also found in some bilateral and regional free trade agreements. Under the Comprehensive Economic Partnership Agreement between the European Free Trade Association states and Indonesia, for example, Switzerland provided a specific tariff rate quota for sustainably produced palm oil imports from Indonesia.

Economic Incentives

Governments can also replace production-enhancing support with market-correcting subsidies that encourage the delivery of essential public goods (Calvo, 2022). It is widely accepted that sustainable agriculture contributes to maintaining traditional landscapes, conserving biodiversity, and reducing GHG emissions through carbon soil sequestration. Societies value these services but there is no price attached to them—a situation which, in the absence of public intervention, can lead to suboptimal levels of those public goods being delivered. Subsidies that are delinked from production, such as decoupled income support, can help address these market failures and enhance sustainability if they are associated with environmental requirements. These could include, for example, the requirement to maintain a diversified set of crops, conserve permanent grassland, or devote a share of arable land to ecological practices. In reality, however, environmental payments are not always commensurate with the cost of adopting environmental practices and routinely involve a significant income support dimension. From a sustainability perspective, these payments should be explicitly linked to the effective delivery of specific environmental benefits, with clear and measurable targets supported by objective indicators of success.

Another approach could be to support general services such as extension services or research and development. In many developing countries, one of the most important policy challenges is to improve productivity sustainably. General services have a critical role to play in this respect, whether through expanding advisory services to producers, improving pest and disease control, addressing deficits in infrastructure provision, or increasing public investment in research in areas like drought-resistant seeds. Since many of the poorest developing countries lack the financial resources required to provide these forms of support, international cooperation, including aid for trade, will be important.

Alternatively, support could be provided to promote the distribution and consumption of nutritious food through direct transfers to low-income citizens. Here, the idea is to target people, not commodities. This not only limits the risk of creating distortions, it also allows governments to target those consumers who need support, instead of encouraging production with the hope that this will address the problem. The US, for example, provides food assistance through the Department of Agriculture's Supplemental Nutrition Assistance Program (previously known as the Food Stamp Program). In other countries like Brazil, such schemes are implemented through school food programmes. If carefully designed, such safety nets can not only contribute to improving calorific intakes but also to delivering more balanced and healthier diets (Lee et al., 2019).

Regulatory Measures

Sustainable agricultural production, consumption, and trade can also be encouraged through the use of standards related to different social and environmental objectives. These are typically associated with labelling schemes such as food or nutrition-related labels. By providing transparency and traceability, these schemes can have a significant impact on consumer behaviour (Ecuador, for instance, saw a reduction in consumption of products with high fat, sugar, and salt content in certain segments of the population as a result of a mandatory traffic light labelling scheme applied to processed food (Daniells, 2018). While some standards are imposed by governments in the form of legal requirements or regulations, most of them are private sector initiatives, often referred to as voluntary sustainability standards. These schemes, although voluntary in nature, can sometimes become a sine qua non condition to access certain market segments. While they can enable producers to receive higher prices, they also imply costs which can discourage producers, particularly in developing countries, who cannot comply with the associated requirements or afford certification procedures.

Concerns have also been raised with respect to the transparency and interoperability of the wide array of different standards and their credibility in terms of the science underpinning their design and their conformity assessment techniques. Notwithstanding these concerns, such requirements are increasingly prevalent in international trade and target both product characteristics and their production processes. One way to facilitate trade in sustainably produced food products is to promote harmonization or mutual recognition (i.e. recognizing as equivalent) another country's regulations or standards that relate to establishing minimum environmental requirements. As compliance with a multitude of new environmental and wider sustainability standards is challenging, especially for small-scale agricultural exporters in developing countries, the development of a set of international minimum environmental standards, similar to the Codex Alimentarius, has also been proposed as a possible way forward (Clay, 2016; TULIP Consulting & IEEP, 2022).

Taking into account inputs and perspectives from developing country exporters in the design of both international and domestic standards is also critical to help ensure that these countries are able to comply with environmental requirements. Similarly, making sure that standards and regulations are based on sound science can go a long way in avoiding disguised protectionism.

International Cooperation

Trade-related financing mechanisms can also help producers in developing countries comply with the social and environmental requirements imposed by such standards. Here again, this can be achieved in the context of aid for trade, such as through specific initiatives like the Standards and Trade Development Facility (STDF), which can provide technical support to developing countries to implement international SPS standards, guidelines, and recommendations. Financing, technical assistance, and incentives for technology transfer can also play a key role in supporting changes to sustainable practices in agriculture that involve a switch to new technologies and more sustainable production methods. Such measures should support domestic efforts in developing countries, for example as envisaged in intended nationally determined contributions and nationally determined contributions submitted to the Paris Agreement or in national adaptation plans.

7. The Road Ahead: Towards a More Coherent and Effective International Regime for Trade and Sustainable Agriculture

The various measures to improve the sustainability of agricultural trade highlighted in section 6 can for the most part, arguably, be pursued by governments acting alone. To the extent that trade restricting measures are designed as good faith environmental policies and do not discriminate arbitrarily between countries where the same conditions prevail, they will most probably not violate existing WTO rules.

The effectiveness of these measures will however significantly increase if they are pursued collectively and applied consistently among a range of countries. The benefits of such international cooperation is particularly the case for measures aimed at removing perverse incentives, such as environmentally harmful subsidies, and fostering trade in environmentally preferable products. In a similar vein, ensuring that environmental regulations, standards, and conformity assessment procedures are applied in a way that ensures interoperability across countries (e.g. through harmonization, equivalences, or mutual recognition) and minimizes trade frictions will send a powerful signal of coherence to exporters. More broadly, in a globalized world economy dominated by highly integrated supply chains, addressing transboundary environmental challenges such as climate change, biodiversity loss, and food and nutrition insecurity increasingly requires coherent policy approaches across jurisdictions.

There is, however, no single forum to discuss cooperation on trade and sustainable agriculture in the multilateral trading system. While existing WTO disciplines provide important flexibilities for WTO members to promote sustainable agriculture unilaterally, they do not proactively contribute to this objective. Sustainable agriculture issues are not explicitly on the current WTO negotiating agenda either and experience has shown that achieving progress on this front has proven challenging. While the Committee on Trade and Environment could arguably provide a forum for such a discussion, this has only happened sporadically in practice with individual members raising specific concerns (e.g. on deforestation related to agriculture) but not in a systematic and comprehensive manner.

Moving forward, discussions on the sustainability dimensions of agricultural trade could focus on the set of policy measures identified in Table 1 of this brief as a way to structure dialogue.

A first step could consist in reinvigorating discussions under the regular committees including the Committee on Trade and Environment and the Committee on Agriculture. In this respect, the work programme on emergency response to food insecurity established under the Committee on Agriculture can provide a critical avenue to address the challenges faced by LDCs and NFIDCs and identify options to increase their resilience in responding to acute food instability.

There have also been discussions on the role of the SPS Committee. The EU, Norway, and Switzerland, submitted a proposal to the SPS Committee in November 2021 following the UN Food Systems Summit arguing that the WTO should play a major role in supporting sustainability objectives in relation to trade in agricultural and fishery products, while— at the same time— preventing any disguised restrictions on international trade and contributing to an even economic development, especially in least developed countries. (WTO Committee on Sanitary and Phytosanitary Measures, 2021). They also proposed that the SPS Committee "should become a forum where Members reflect on what should be done to make trade a major contributor to sustainable food systems and a sustainable future." At MC12, WTO members also adopted an SPS declaration highlighting the role of the SPS Agreement in supporting rural livelihoods, trade, and sustainable agricultural growth, notably through its provisions on transparency, and the need to base SPS measures on scientific principles to protect humans, animals, or plants (WTO, 2022c). The text makes explicit references to increasing environmental challenges and recognizes the growing importance of sustainable agricultural practices and production systems, including their contribution to addressing climate change and biodiversity conservation. It instructs the SPS Committee to undertake a work programme to identify the impacts of emerging challenges,

and how the implementation of the SPS Agreement can facilitate global food security and more sustainable food systems. The declaration further lists specific themes to be addressed highlighting, among others, the role of international standards, the need to base SPS measures on scientific evidence and principles and adapt them to regional conditions, and the importance of cooperation and awareness raising.

Beyond the regular bodies of the WTO, concerns around sustainable agriculture could feature more systematically in the context of the Aid for Trade initiative and related support measures under the EIF and the STDF. Similarly, the WTO Secretariat could include consideration of climate and other environmental risks and vulnerabilities in sections dealing with agriculture of Trade Policy Review reports.

A third avenue to explore is the Trade and Environmental Sustainability Structured Discussions (TESSD), launched to advance policy dialogue, promote transparency, and identify areas for future work including possible "deliverables" on environmental sustainability in the WTO (WTO Committee on Trade and Environment, 2020). The initiative is, as of November 2022, formally endorsed by 74 countries, including some of the largest trading countries like the EU, China, and the US, accounting for 84% of global trade, and the discussions are open to all members. Several proposals circulated in 2021 identified trade and sustainable agriculture as a topic for discussion, including issues related to agriculture standards and regulations including sanitary and phytosanitary measures and environmentally harmful agricultural subsidies (WTO, 2021b), sustainable commodities, and deforestation-free supply chains (WTO, 2021c).

On 15 December 2021, co-sponsors of TESSD issued a ministerial statement to provide guidance on priorities and a roadmap for future work. On 2 December 2022, co-sponsors held a first high-level event to take stock of progress achieved and adopt a work plan towards the Thirteenth WTO Ministerial Conference. While the statement does not explicitly refer to future work on sustainable agriculture, it calls for identifying and compiling best practices, as well as exploring "opportunities for voluntary actions and partnerships to ensure that trade and trade policies are supportive of and contribute to […] promoting sustainable supply chains and addressing the challenges and opportunities arising from the use of sustainability standards and any related measures, in particular for developing Members." Ministers also supported "continued discussions on the environmental effects and trade impacts of relevant subsidies and the role of the WTO in addressing these."

A TESSD working group to discuss environmentally harmful subsidies has subsequently been established and currently provides a critical avenue to discuss the sustainability dimension of agriculture domestic support. The other work streams established under the initiative focus on environmental goods and services, the circular economy, and trade-related climate measures, each of which have relevance to the trade and sustainable agriculture debate. While there is no specific work stream proposed on sustainable agriculture, it is a recurring theme that arises regularly in TESSD discussions. Proponents of work on this topic have highlighted, among others, the "triple challenge" of seeking simultaneously to: (i) guarantee income and employment of millions of people working throughout the food chain; (ii) provide food and nutrition security for a growing global population ; and (iii) promote the environmental sustainability of the sector taking into account different climatic and geographical conditions. As discussions evolve, like-minded countries could propose a specific work stream focused on advancing policy dialogue on sustainable agriculture and identifying areas for future collective action in the WTO.

In short, despite the absence of a single dedicated space to address the sustainability of agriculture in the multilateral trading system, a range of possible avenues exist that could be exploited to foster open and inclusive discussions on a topic which is only likely to gain momentum in years to come. While work through these avenues, such as the Committee on Trade and Environment and TESSD, should not detract or divert attention from ongoing agriculture negotiations, they could provide a useful complement and contribute to catalysing discussions on how trade and trade policies can contribute to a more integrated approach to fostering sustainability of food and agricultural systems. Discussions under TESSD will also benefit from the participation of a broader range of stakeholders.

ABBREVIATIONS

AMS	Aggregate Measurement of Support
CGIAR	Consultative Group for International Agricultural Research
COP26	26th Conference of Parties of the UNFCCC
EIF	Enhanced Integrated Framework
EU	European Union
FACT	Forests, Agriculture and Commodity Trade
FAO	Food and Agriculture Organization of the United Nations
GATT	General Agreement on Tariffs and Trade
GHG	Greenhouse Gas
ITC	International Trade Centre
LDC	Least Developed Country
MC12	Twelfth WTO Ministerial Conference
NFIDC	Net Food-Importing Developing Country
OECD	Organisation for Economic Co-operation and Development
PSE	Producer Support Estimate
SDG	Sustainable Development Goal
SPS	Sanitary and Phytosanitary
STDF	Standards and Trade Development Facility
TBT	Technical Barriers to Trade
TESSD	Trade and Environmental Sustainability Structured Discussions
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPOV	International Union for the Protection of New Varieties of Plants
US	United States
WTO	World Trade Organization

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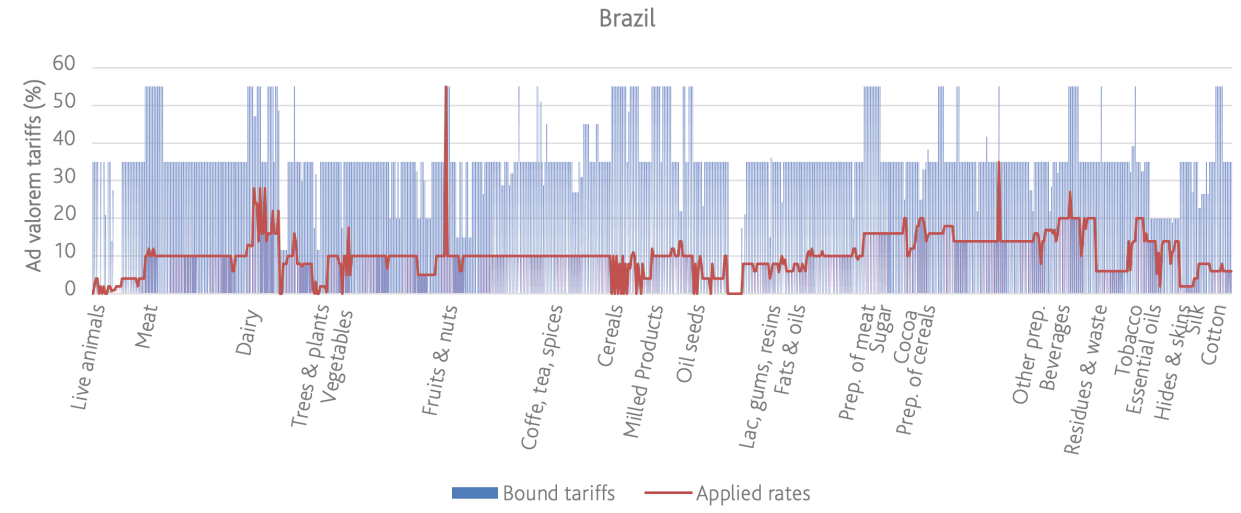
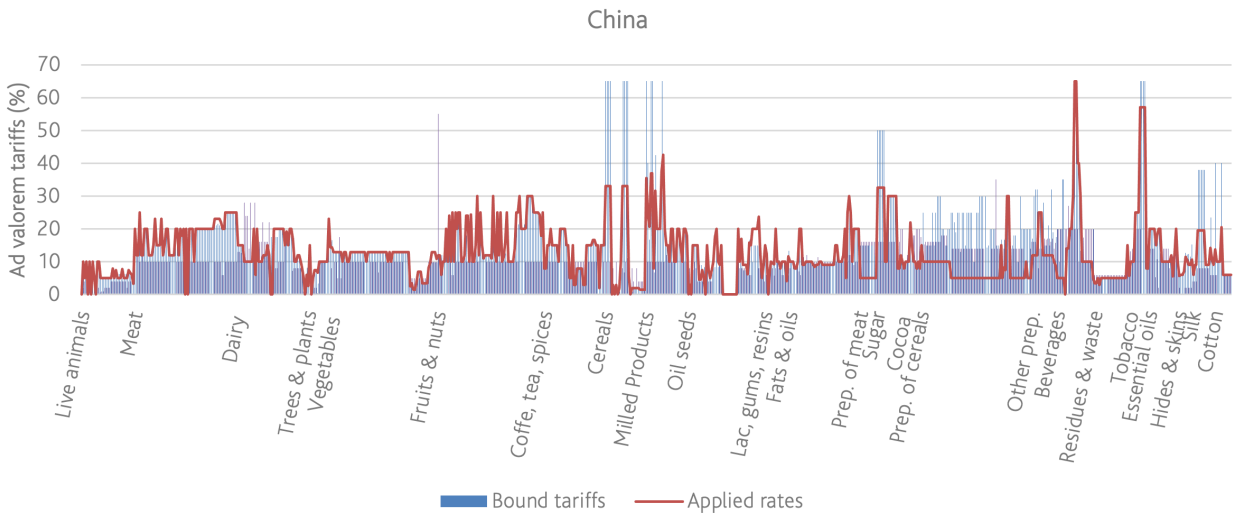
ANNEX I. Trade and Sustainable Agriculture: Selected Related Treaties and Conventions

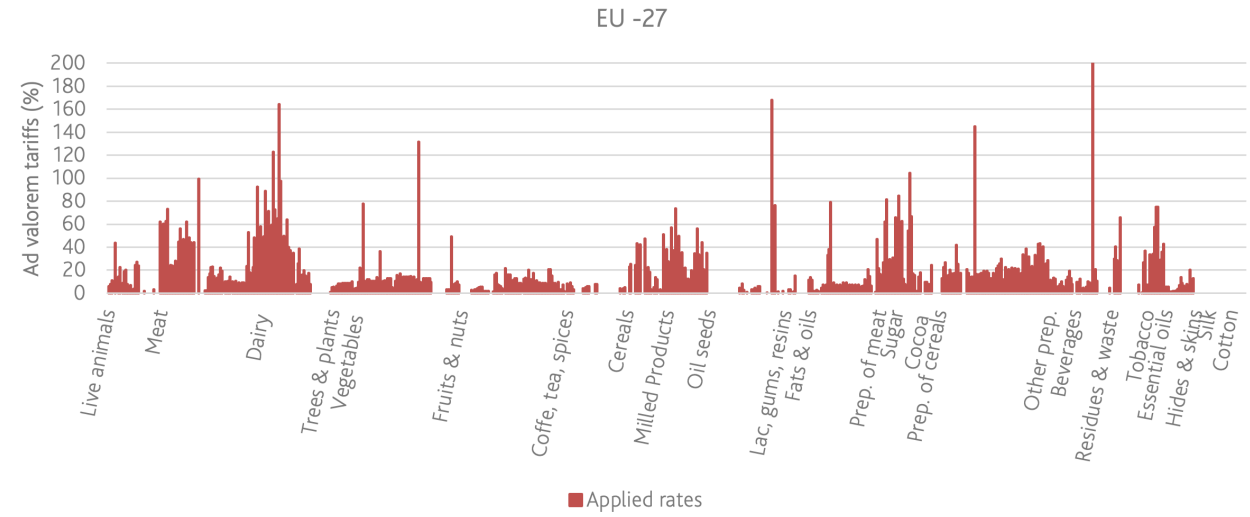
CONVENTIONS, TREATIES, AND STANDARDS	SHORT DESCRIPTION
CODEX ALIMENTARIUS	The Codex Alimentarius is a collection of internationally adopted food standards and related texts presented in a uniform manner. These food standards and related texts aim at protecting consumers' health and ensuring fair practices in the food trade. The publication of the Codex Alimentarius is intended to guide and promote the elaboration and establishment of definitions and requirements for foods to assist in their harmonization and in doing so to facilitate international trade.
CONVENTION ON BIOLOGICAL DIVERSITY (CBD)	The objectives of the CBD are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from commercial and other utilization of genetic resources.
INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE	The objectives of the treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the CBD, for sustainable agriculture and food security. The treaty covers all plant genetic resources for food and agriculture, while its Multilateral System of Access and Benefit-Sharing covers a specific list of 64 crops and forages. The treaty also includes provisions on Farmers' Rights.
INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS	The objective of the convention is the protection of new varieties of plants through intellectual property rights for plant breeders and the development of new varieties of plants for the benefit of society.
INTERNATIONAL PLANT PROTECTION CONVENTION (IPPC)	The IPPC aims to protect world plant resources, including cultivated and wild plants, by preventing the introduction and spread of plant pests and promoting the appropriate measures for their control. The convention provides the mechanisms to develop the International Standards for Phytosanitary Measures (ISPMs), and to help countries to implement the ISPMs and the other obligations under the IPPC, by facilitating national capacity development, national reporting, and dispute settlement.
UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION (UNCCD)	The UNCCD aims both to combat desertification (i.e. degradation of land in arid, semi-arid, and dry sub-humid areas) and to promote sustainable land management by restoring drought-affected land.
ROTTERDAM CONVENTION ON THE PRIOR INFORMED CONSENT PROCEDURE FOR CERTAIN HAZARDOUS CHEMICALS AND PESTICIDES IN INTERNATIONAL TRADE	The Rotterdam Convention aims to promote shared responsibility and cooperative efforts in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm. It contributes to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to parties. The convention also creates legally binding obligations for the implementation of the Prior Informed Consent procedures.

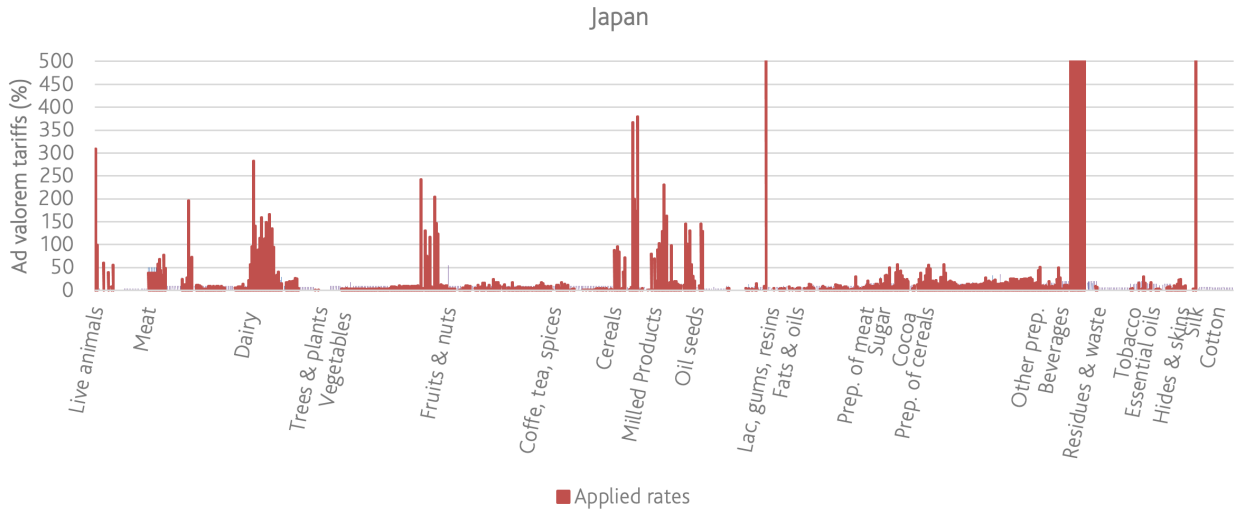
WTO AGREEMENTS	SHORT DESCRIPTION
WTO AGREEMENT ON AGRICULTURE	The Agreement on Agriculture provides a framework for the long-term reform of agricultural trade and domestic policies, with the aim of leading to fairer competition and a less distorted sector. It covers market access through tariffs and quantitative restrictions and the use of subsidies including export subsidies and other government support programmes that subsidize exports. Under the agreement, WTO members agree to "schedules" or lists of commitments that set limits on the tariffs they can apply to individual products and on levels of domestic support and export subsidies.
WTO SANITARY AND PHYTOSANITARY (SPS) AGREEMENT	The SPS Agreement seeks to strike a balance between the right of WTO members to protect health and the need to allow the smooth flow of goods across international borders. It encourages WTO members to base their regulations on international standards but allows Members to impose more stringent requirements based on a scientific assessment of health risks.
WTO TECHNICAL BARRIERS TO TRADE (TBT) AGREEMENT	The TBT Agreement aims to ensure that regulations, standards, and testing and certification procedures do not create unnecessary obstacles to trade while achieving legitimate public policy objectives. It strongly encourages members to base their measures on international standards.
WTO AGREEMENT ON TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (TRIPS)	The TRIPS Agreement provides for minimum standards of protection of intellectual property rights and procedural rules relating to enforcement. It covers copyright and related rights, trademarks, geographical indications, industrial designs, patents, the protection of new varieties of plants, integrated circuits, and undisclosed information.

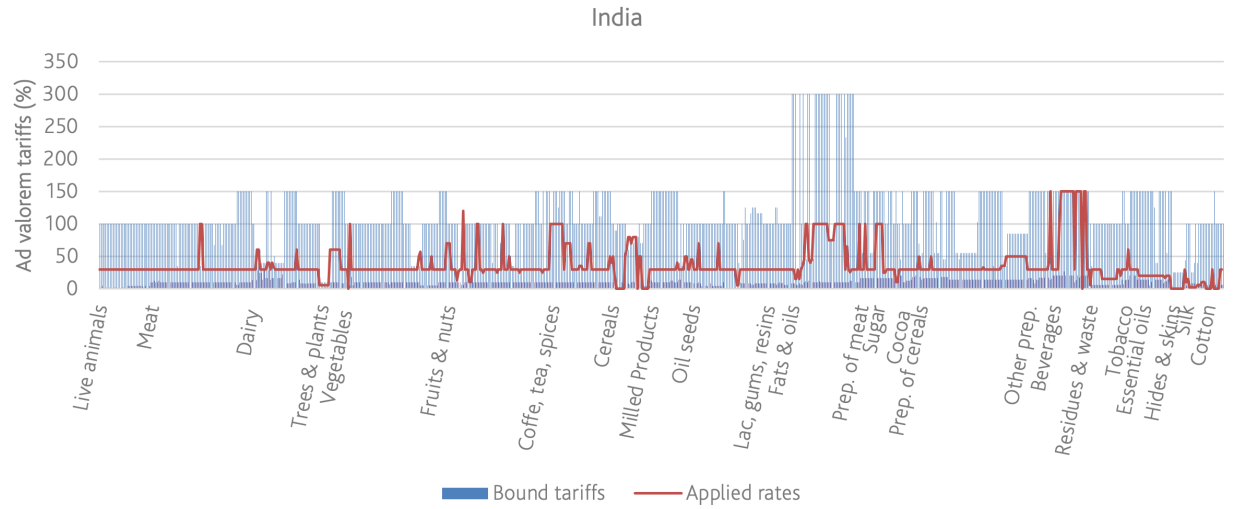
ANNEX II. Bound and Applied Tariffs on Agricultural Products (2019)

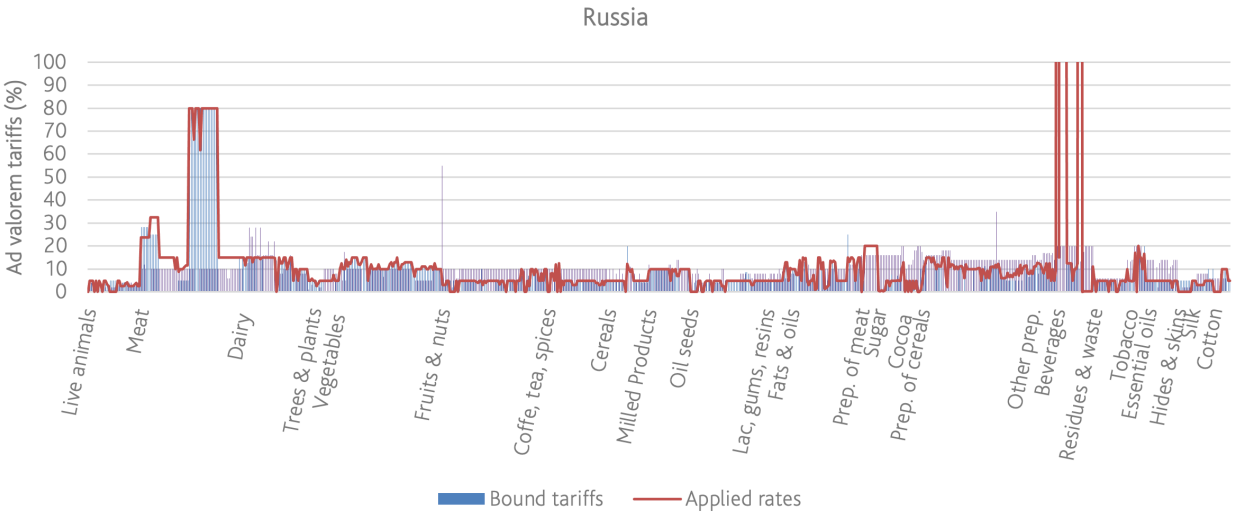


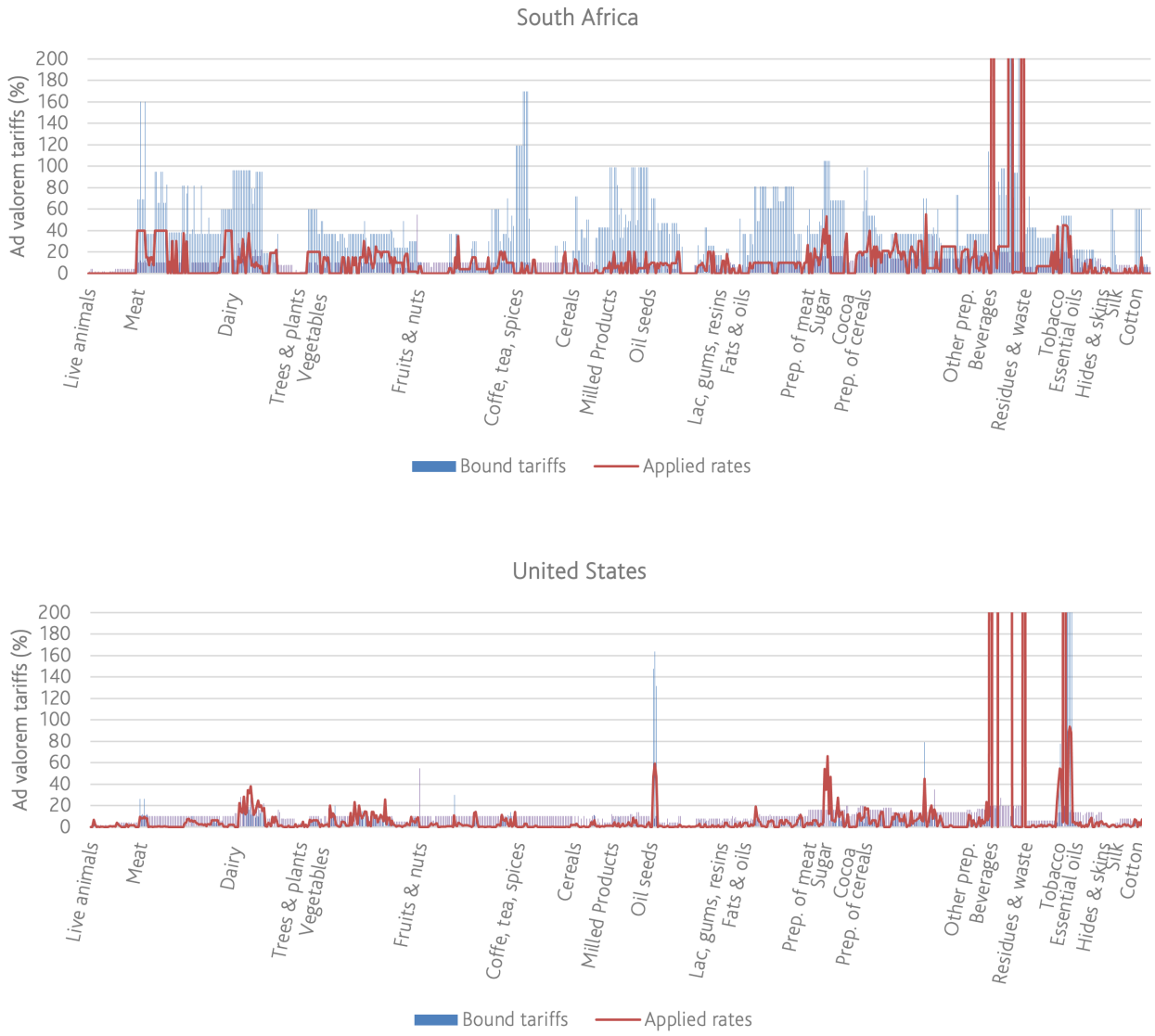





Japan
Ad valorem tariffs (%)
500
450
400
350
300
250
200
150
100
50
0
Live animals
Meat
Dairy
Trees & plants
Vegetables
Fruits & nuts
Coffe, tea, spices
Cereals
Milled Products
Oil seeds
Lac, gums, resins
Fats & oils
Prep. of meat
Sugar
Cocoa
Prep. of cereals
Other prep.
Beverages
Residues & waste
Tobacco
Essential oils
Hides & skins
Silk
Cotton
Applied rates


India
Ad valorem tariffs (%)
350
300
250
200
150
100
50
0
Live animals
Meat
Dairy
Trees & plants
Vegetables
Fruits & nuts
Coffe, tea, spices
Cereals
Milled Products
Oil seeds
Lac, gums, resins
Fats & oils
Prep. of meat
Sugar
Cocoa
Prep. of cereals
Other prep.
Beverages
Residues & waste
Tobacco
Essential oils
Hides & skins
Silk
Cotton
Bound tariffs
Applied rates

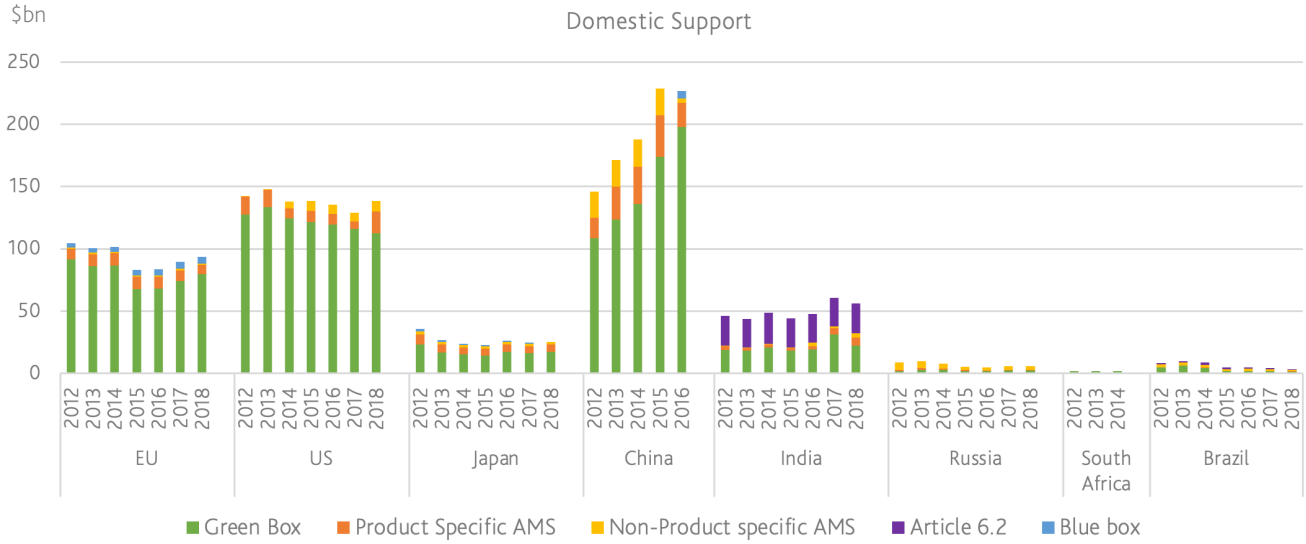

Russia
Ad valorem tariffs (%)
100
90
80
70
60
50
40
30
20
10
0
Live animals
Meat
Dairy
Trees & plants
Vegetables
Fruits & nuts
Coffe, tea, spices
Cereals
Milled Products
Oil seeds
Lac, gums, resins
Fats & oils
Prep. of meat
Sugar
Cocoa
Prep. of cereals
Other prep.
Beverages
Residues & waste
Tobacco
Essential oils
Hides & skins
Silk
Cotton
Bound tariffs
Applied rates

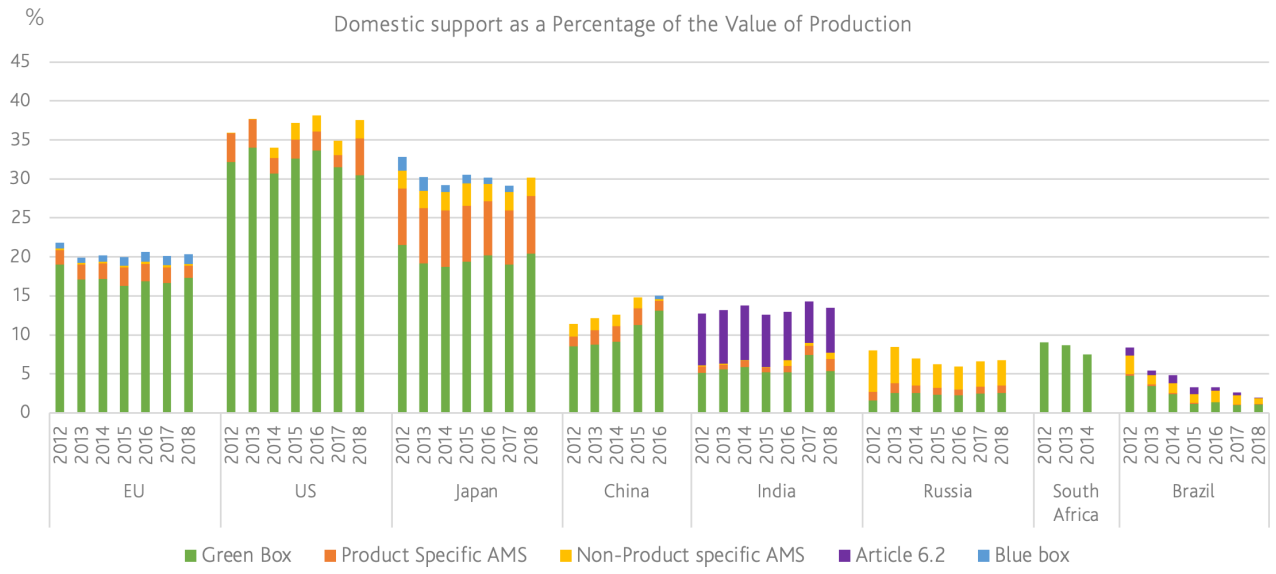


Note: Non ad valorem tariffs have been converted into ad valorem equivalent using the UNCTAD method. Bound tariffs correspond to the maximum rate a WTO member can apply on a particular product according to its WTO commitments. Applied tariffs are the level of protection applied in practice on a most favoured nation basis (i.e. to all countries which do not benefit from special trade preferences granted for example to developing or least developed countries or which do not trade under the regime of a bilateral or regional free trade agreement).

Source: Author's elaboration based on UNCTAD (n.d.-b).

ANNEX III. Domestic Support Notifications in the WTO Since 2012





Source: Author's elaboration based on WTO domestic support notifications.

TESS | Forum on Trade Environment & the SDGs

About TESS

By promoting dialogue on trade, the environment, and sustainable development, the Forum on Trade, Environment & the SDGs (TESS) supports a trading system that addresses global environmental crises and advances the Sustainable Development Goals. Our work catalyses inclusive, evidence-based, and solutions-oriented debate, facilitates engagement between policy communities, and inspires governments and stakeholders to build consensus for meaningful action on trade and trade policies that work for people and the planet. TESS is a partnership of the Geneva Graduate Institute and the United Nations Environment Programme (UNEP), housed at the Geneva Trade Platform.

Author

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